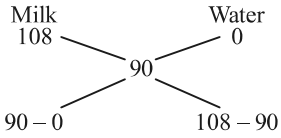
Answer & Solutions

Level-I

1. (c) The mean value is 90 *P* and the price of water is 0 *P*.



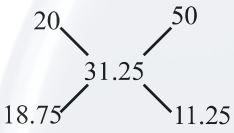
By the Alligation Rule, Milk and water are in the ratio of 5 : 1.
∴ quantity of milk in the mixture = 5 × 16 = 80 litres.

2. (a) Go through options :

$$30 \times 50 + 50 \times 20 = 2500 \text{ paise}$$

Alternatively : Since the average price of a coin

$$= \frac{2500}{80} = 31.25 \text{ paise}$$



So the ratio of no. of 20 paise coins to the no. of 50 paise coins

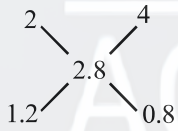
$$= 18.75 : 11.25$$
$$= 75 : 45 = 5 : 3$$

Therefore, the no. of coins of the denominations of 50 paise is 30.

3. (c) Go through options :

$$24 \times 4 + 36 \times 2 = 168$$

Alternatively :



$\Rightarrow 3 : 2$

Therefore, the ratio of men and sheep is 3 : 2

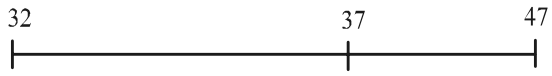
Alternatively : Suppose there are only men, then the no. of legs = 60 × 2 = 120.

Now since there are 48 = (168 – 120) legs extra, it means there are $24 = \left(\frac{48}{2}\right)$ sheep, since a sheep has 2 extra legs than a man has.

4. (b) Solving the following alligation figure:

The answer would be 4.625/kg

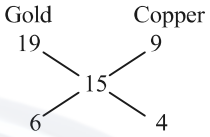
5. (a) The ratio would be 1 : 2 as seen from the figure:



6. (b) **Short-Cut-Method :** In such questions the ratio is

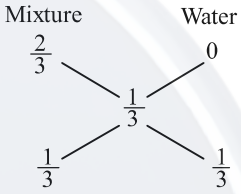
$$\text{water : milk} = 16\frac{2}{3} : 100 = 1 : 6$$

7. (b)



∴ Gold : Copper = 6 : 4 = 3 : 2

8. (c) Apply the alligation on fracfion of milk in each mixture.



Ratio of mixture to water = 1 : 1

Therefore, if there is 60 litre of solution, 60 litres of water should be added.

9. (c) Quantity of milk = $45 \times \frac{4}{5} = 36$ litres

Quantity of water = $45 \times \frac{1}{5} = 9$ litres

Let *x* litres of water be added to make the ratio 3 : 2

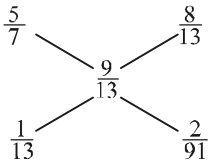
Then, $\frac{36}{9+x} = \frac{3}{2} \Rightarrow 72 = 27 + 3x \Rightarrow x = 15$ litres

10. (d) Since we do not know either the average weight of the whole class or the ratio of no. of boys to girls.

11. (c) In vessel A, milk = $\frac{5}{7}$ of the weight of mixture

In vessel B, milk = $\frac{8}{13}$ of the weight of mixture. Now, we want to form a mixture in which milk will be $\frac{9}{13}$ of the weight of this mixture.

By alligation rule:



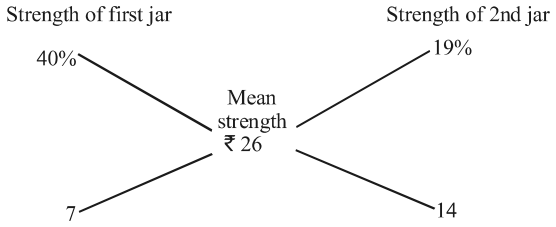
∴ required proportion is $\frac{1}{13} : \frac{2}{91} = 7 : 2$

12. (b) The amount of spirit left

= 20 × 4/5 × 4/5 × 4/5 × 4/5 × 4/5

= 4096/625 = 6 (346/625).

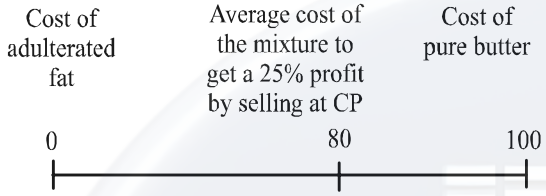
13. (b) By the rule of alligation, we have:



$\therefore$ So , Ratio of 1st and 2nd quantities = 7 : 14 = 1 : 2

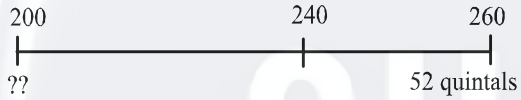
$\therefore$ Required quantity replaced = $\frac{2}{3}$

14. (a)



The ratio of mixing required would be 1 : 4 which means that the percentage of adulterated fat would be 20%.

15. (c) By selling at 300 if we need to get a profit of 25% it means that the cost price would be 300/1.25 = 240.



Ratio of mixing required to get an average of ₹ 240 per quintal = 1 : 2

Thus, in 52 quintals of the second we need to mix 26 quintals of the first.

16. (b) The percentage of honey in the new mixture would be:

$(2 \times 25 + 3 \times 75)/5 = 275/5 = 55\%$. The ratio of honey to water in the new mixture would be

55 : 45 = 11 : 9

17. (c) 90% and 97% mixed to form 94% means that the mixing ratio is 3 : 4. The first solution would be $3 \times 21/7 = 9$ litres.

18. (d) We cannot determine the answer to this question as we do not know the price per kg of the other type of ghee. Hence, we cannot find the ratio of mixing which would be required in order to move further in this question.

19. (d) Number of articles made in 1st hour = 60

Number of articles made in 2nd hour = 45

Number of articles made in 3rd hour = 63

Number of articles made in 4th hour = 42

Number of articles made in 5th hour = 63

So, obviously articles made in 4th hour is minimum.

20. (c) Let x liters of 50% solution and y litres of 80% solutions are used

$$\frac{x}{y} = \frac{80-62}{62-50} = \frac{18}{12} = \frac{x}{y} = \frac{3}{2}$$

Solution get mixed in the ratio 3 : 2.

Now, suppose the value of acid is Z litres

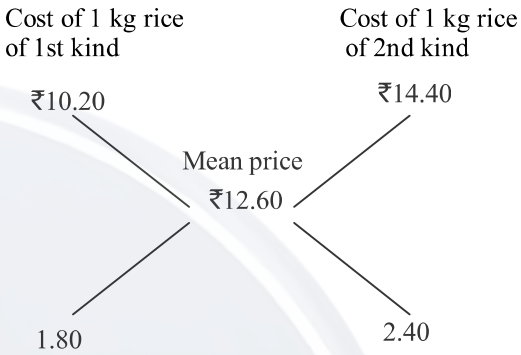
$$\Rightarrow \frac{0.62z}{z+6} = \frac{1}{2}$$

$$\Rightarrow 1.24\,Z = Z + 6 \qquad \Rightarrow 0.24\,Z = 6$$

$$Z = 25$$

Hence, required rate = $\frac{2}{5} \times 25 = 10$ litres

21. (a) By the rule of alligation:

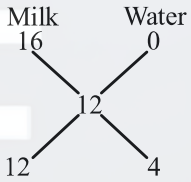


$\therefore$ Required ratio = 1.80 : 2.40 = 3 : 4.

22. (a) $\because$ SP of the mixture = ₹ 15

$\therefore$ CP of the mixture = $15 \times \frac{100}{125}$ = ₹ 12

Now, by the rule of mixture,



$\therefore$ Ratio of milk and water in the mixture = 12 : 4 = 3 : 1