

Mixture and Alligation Questions

For RRB NTPC Exams

1. X and Y two alloys are made by mixing aluminum and magnesium metals in the ratio of 8: 5 and 9:16 respectively. If equal amounts of alloys are melted to form a new alloy Z, what will be the ratio of aluminum and magnesium in Z?
 - a) 317:333
 - b) 316:319
 - c) 314:333
 - d) 313:317
2. In a glass of syrup, water and sugar are mixed in the ratio 3: 2. If 8 liters of the mixture is replaced by 12 liters of sugar liquid, then the ratio of water and sugar becomes 1: 2. How many liters of water was in the glass?
 - a) 4.6
 - b) 13.8
 - c) 31.8
 - d) 12.8
3. How many kilograms of sugar of Rs.5.4 per kg should be mixed with 10 kg of sugar of Rs.4.5 per kg, such that there may be gain of 20% by selling the mixture at Rs.5.94 per kg.
 - a) 10 kg
 - b) 12 kg
 - c) 15 kg
 - a) 1:2
 - b) 2:3
 - c) 2:5
 - d) 1:6
4. A and B pulses of different quality, priced at Rs 70 per kg and Rs 130 per kg respectively, are mixed. The new average price of the mixture obtained is Rs 100 per kg. What is the ratio of the quantity of A and B in the mixture?
 - a) 1:2
 - b) 1:3
 - c) 1:1
 - d) 1:5
5. Silver is 34 times heavier than water and brass is 18 times heavier than water. In what ratio should both the metals be mixed so that they become 24 times heavier than water?
 - a) 4:3
 - b) 7:1
 - c) 3:5
 - d) 3:2
6. In what proportion should rice costing Rs. 20 per kg be mixed with another variety of rice costing Rs. 15 per kg, so that the mixed rice obtained has a profit of 20% by selling it at the rate of Rs. 20.40 per kg?

volume of the mixture is 42 liters. If 8 liters of water is added to it, what will be the percentage of milk in the mixture?

 - a) 55
 - b) 56
 - c) 54
 - d) 50
7. In a milk water mixture $\frac{2}{3}$ part is milk. The total

8. The ratio of Alcohol and water in two pots is 2 : 5 and 4 : 3, find the ratio of alcohol and water in the new mixture obtained (in the third new vessel) after mixing the mixture of the two pots.

- a) 3 : 1
- b) 7 : 9
- c) 3 : 4
- d) 1 : 3

9. A mixture of 10 liters of sugar contains 11% sugar, out of which 2 liter of water becomes steam. Find the percentage of sugar in the remaining mixture.

- a) 15%
- b) 13.75%
- c) 16%
- d) 24%

10. In what ratio should 30% milk solution be mixed with 60% milk solution so that the resulting solution contains 40% milk?

- a) 12 : 13
- b) 13 : 12
- c) 2 : 1

by 10 liters of alcohol, then the ratio of water and alcohol becomes 7:9. How many liters of water was in the drum?

- a) 12
- b) 22.75
- c) 33
- d) 22

14. A pot of honey extracted from the jungles of Kolkata contains 40% carbohydrates. Part of it is replaced by other honey, which has 19% carbohydrate, then the new mixture has 26% carbohydrate. How much honey was replaced?

- a) $\frac{2}{3}$
- b) $\frac{4}{5}$

d) 3 : 5

11. The mixture of alcohol and water in two pots, P and Q, is in the ratio 4: 5 and 3: 2. In what proportion can these two mixtures be mixed to obtain a new mixture of half alcohol and half water?

- a) 1 : 2
- b) 9 : 5
- c) 3 : 4
- d) 3 : 7

12. The 30 liter beer contains 5% alcohol. How many liters of water should be added to the beer so that the alcohol content becomes 3%? a) 20 liter

- b) 15 liter
- c) 10 liter
- d) 25 liter

13. A drum of beer has water and alcohol in the ratio 7:5. If 9 liters of the mixture is replaced

- c) $\frac{3}{5}$
- d) $\frac{4}{3}$

15. At the Heineken Beer Company four drums of similar size are filled with beer. The alcohol content in the four drums is 80% 75%, 60% and 50% respectively. If all four mixtures are mixed, what will be the ratio of water and alcohol in the mixture obtained?

- a) 3 : 7
- b) 27 : 53
- c) 13 : 15
- d) 9 : 13

16. From a drum containing 50 liters of pure honey from Patanjali, 10 liters of honey are extracted and 10 liters of preservatives are added. If this

process is repeated three times, what is the ratio between ultimately preservative and honey?

- a) 16 : 17
- b) 18 : 19
- c) 61 : 64
- d) 11 : 12

17. How many liters of preservatives should be added to a 16 liter cough syrup with 10% preservatives, so that the amount of preservatives in the mixture is 20%?

- a) 2 liters
- b) 1.5 liters
- c) 3 liters

19. Three varieties of almonds Rs.25200 per quintal, Rs.28000 per quintal and Rs.31600 per quintal is sold. What will be the profit or loss on selling 274 kg of the first variety, 197 kg of the second variety and 54 kg of the third variety at the rate of Rs.28350 per quintal?

- a) Profit of Rs.7565.50
- b) Loss of Rs.6765.50
- c) Profit of Rs.5832.40
- d) Loss of Rs.7125.30

20. Preservatives of Rs. 225 per kg and Rs. 275 per kg are used to protect syrup. In what proportion should both preservatives be mixed so that the mixture obtained becomes Rs. 253.4 per kg (approx).

- a) 4 : 3
- b) 1 : 2
- c) 7 : 3
- d) 3 : 4

21. In what proportion should buffalo milk costing Rs. 40 per kg be mixed with cow's milk at Rs. 30 per kg, so that there is a profit of 20% on

d) 2.5 liters

18. The initial ratio of maida and flour to saltpeter was 17:28. How much flour is added to the raw material of 27 kg saltpeter so that ratio of maida and flour become 2:5?

- a) 7.5 kg
- b) 8.7 kg
- c) 7.3 kg
- d) 9.1 kg

selling the mixture at the rate of Rs. 40.8 per kg.

- a) 3 : 2
- b) 2 : 3
- c) 12 : 15
- d) 11 : 16

22. In what ratio should Rs. 50 per kg and Rs. 60 per kg of sugar be mixed so that 20% profit is made by selling the mixture at Rs. 70 per kg?

- a) 12 : 13
- b) 12 : 15
- c) 1 : 5
- d) 1 : 4

23. Two types of tea, priced at Rs.380 per kg and Rs.420 per kg, are mixed in the same quantity. And are sold at a rate of Rs.450 per kg. Find the percentage profit.

- a) 11%
- b) 12.5%
- c) 13%
- d) 14.5%

24. What is the amount of egg in a 1 kg cake, if the cake contains 32% egg, 40% flour and the rest sugar?

- a) 370 gm

- b) 340 gm
- c) 410 gm
- d) 320 gm

25. Cow and buffalo milk, which are priced at Rs.25

kg, the profit percentage will be approximately?

- a) 20%
- b) 33%
- c) 25%
- d) 38%

26. To get 25% profit on milk at the rate of Rs. 30 per kg, in what proportion will the milk of cow and buffalo have to be mixed, if there is a loss of 20% on selling cow's milk at Rs.16 per kg and Rs. 40 per kilogram of buffalo milk has a profit of 20%?

- a) 4:5
- b) 3:2
- c) 2:1
- d) 1:2

27. The ratio of water and alcohol in one drum of wine is 4:3 and in the other drum the ratio is 3:2. What will be the ratio of water and alcohol when both are mixed in the ratio of 1:2 respectively?

- a) 42:41
- b) 62:43
- c) 48:57
- d) 39:48

28. In what ratio should Rs. 35 per kg of cow's milk and Rs. 65 per kg of buffalo milk be

the resultant mixture. Find the initial quantity of mixture.

- a) 80 litres

and Rs.35 per kg respectively, mixed in ratio of 4:6 and selling at the rate of Rs.37 per

mixed so that the new price of the mixture becomes Rs. 50 per kg?

- a) 3:4
- b) 2:3
- c) 1:1
- d) 1:3

29. In what proportion should the two liquor drums, where alcohol and water are in the ratio of 3:1 and 5:3 respectively, be mixed so that in mixture ratio of alcohol and water is 2:1?

- a) 1:2
- b) 2:1
- c) 2:3
- d) 3:2

30. The two drums of Ruhafaza have sugar and water in the ratio of 5: 3 and 7: 9 respectively. What will be the new ratio of sugar and water when these two drums are mixed?

- a) 17:15
- b) 15:17
- c) 13:17
- d) 17:13

31. A mixture of diesel and petrol contains 80% diesel. If 18 litres of petrol is added to the mixture, then the quantity of petrol in the mixture becomes half the quantity of diesel in

- b) 90 litres
- c) 120 litres
- d) None of these

32. A mixture of milk and water is mixed in the ratio of 4:3, respectively. If 4 litres of water is added

to the mixture, then the ratio of milk to water becomes 6:5, respectively. Find the initial quantity of milk in the mixture.

- a) 40 litres
- b) 48 litres
- c) 44 litres
- d) 36 litres

33. The percentage of milk in a mixture of 60 litres containing water and milk is 75%. Find the amount of water to be mixed in the mixture such that the percentage of milk is reduced to 50%.

- a) 35 litres
- b) 25 litres
- c) 20 litres
- d) 30 litres

34. A mixture of milk and water contains 'x'% of water. If the quantity of milk in the mixture is 16 litres more than the quantity of water and the total mixture is 80 litres, then find the value of 'x'.

- a) 40%
- b) 33.33%
- c) 50%

37. A container contains 96 litres of mixture of water and milk in the ratio 3:5, respectively. If a person adds 4 litres of water in the mixture, then what will be the ratio of milk to water in the final mixture?

- a) 3:2
- b) 4:3
- c) 5:4
- d) 2:1

38. A vessel contains mixture of milk and water mixed in the ratio 13:5, respectively. 72 liters of the mixture is taken out of the vessel and

d) 25%

35. Water and alcohol are mixed in an empty container in the ratio of 7:2, respectively. If 45 ml of mixture is replaced with 15 ml of water then, the ratio of water to alcohol becomes 4:1, respectively. Find the amount of water mixed initially.

- a) 140 ml
- b) 210 ml
- c) 70 ml
- d) 105 ml

36. A mixture of milk and water contains 45% water. If the total cost of milk present in the mixture at the rate of Rs. 21/litre is Rs. 2079, then find the additional amount of water to be used in the mixture such that quantity of milk and water becomes same.

- a) 16 litres
- b) 18 litres
- c) 19 litres
- d) 21 litres

replaced with 51 liters of water such that the ratio of the milk to water in the vessel becomes 8:7, respectively, then find the initial quantity of water in the vessel.

- a) 50 liters
- b) 55 liters
- c) 60 liters
- d) None of these

39. In a container, the ratio of milk and water is 4:3. If a milkman adds 7 litres of milk into it then the ratio would change to 5:2. Calculate the amount of water present in the final mixture.

- a) 6 litres
- b) 4 litres
- c) 8 litres

d) 5 litres

40. A mixture of diesel and petrol contains 80% petrol. If 25 litres of diesel is added to the mixture, the quantity of diesel in the resultant mixture becomes 40 litres, find the quantity of petrol initially.

- a) 54 litres
- b) 60 litres
- c) 72 litres
- d) 80 litres

41. In a container, the respective ratio of milk to water is 4:3. If milkman adds 4 litres of water to it, then the ratio of milk to water would change to 6:5, respectively. Find the initial

- b) 72 litres
- c) 78 litres
- d) None of these

43. 360 litres of a mixture contains milk and water in the ratio of 5:3 respectively. After addition of some litres of water to it, the quantity milk becomes equal to the quantity of water in the resultant mixture, then find the amount of water added to the initial mixture to form the resultant mixture.

- a) 45 litres
- b) 60 litres
- c) 75 litres
- d) 90 litres

44. The price of the three varieties of rice, rice 1, rice 2 and rice 3 is Rs. 44/kg, Rs. 48/kg and Rs. 60/kg, respectively. If the ratio in which the quantity of rice 1, rice 2 and rice 3 is mixed to form a mixture is 5:3:2, respectively, then find the price per kg of the mixture.

- a) Rs. 47.60
- b) Rs. 49.20

quantity of mixture in the container.

- a) 70 litres
- b) 91 litres
- c) 77 litres
- d) 84 litres

42. A mixture of milk and water, contains milk and water in the ratio of 7: 6, respectively. If 6 litres of water is added to the mixture, then the quantity of water and milk in the resultant mixture becomes same. Find the initial quantity of mixture.

- a) 84 litres

c) Rs. 48.40

d) None of these

45. Container P contains a mixture of liquid A and liquid B in the ratio of 5:4 respectively. 25% of this mixture is taken out and mixed with a mixture of the same liquids in container Q. The quantity of mixture in container Q initially is 12 litres with the ratio of quantity of liquid A to quantity of liquid B i.e. 2:1, respectively. If the quantity of liquid B in the resultant mixture is 7 litres in container Q, then what was the quantity of liquid A initially in container P?

- a) 15 litres
- b) 18 litres
- c) 20 litres
- d) 10 litres

46. A vessel contains mixture of milk and water, mixed in the ratio 11:5 respectively. 64 liters of mixture is taken out of the vessel and replaced by 9 liters of water so that the ratio of the milk to water in the vessel becomes 7:4. Find the initial quantity of mixture in the vessel.

- a) 224 liters
- b) 208 liters
- c) 176 liters
- d) 160 liters

47. A vessel contains some quantity of mixture of milk and water in the ratio of 5:4, respectively. If

quantity of milk in the mixture, then find the initial quantity of the mixture.

- a) 42 litres
- b) 36 litres
- c) 45 litres
- d) 54 litres

48. The ratio quantity of liquid A to liquid B in container P is 2:5, respectively and the ratio of quantity of liquid A to liquid B in container Q is 3:4 respectively. The contents of both containers are now mixed in a new container R which was initially empty. If the ratio of quantity of liquid A to liquid B in the new container R is 2:3, then find the ratio of liquid A present initially in container P to container Q.

- a) 2:1
- b) 2:3
- c) 1:6
- d) 3:2

49. Solution X contains 20% acid and solution Y contains 60% acid. In what ratio should solution X be mixed with Solution Y to obtain a mixture with 50% acid?

- a) 1 : 2
- b) 3 : 1
- c) 1 : 3
- d) 2 : 1

50. In what ratio should coffee powder costing

20% of the mixture is taken out and then 4 litres of water is added to the mixture so that the quantity of water becomes equal to the

Rs.2000/kg be mixed with coffee powder costing Rs 1000/kg so that the cost of the mixture is Rs.1250/kg?

- a) 1 : 4
- b) 4 : 1
- c) 3 : 1
- d) 1 : 3

ANSWERS

1) Answer: A

The ratio of aluminum and magnesium in Z

Suppose, water and sugar are $3x$ liter and $2x$ liter respectively.

$$= [8/13 + 9/25] : [5/13 + 16/25] = 317/325 : 333/325 = 317:333$$

2) Answer: B

According to first condition,

Remaining total mixture after removal of 8 liter = $(5x-8)$ liter

The amount of water in this mixture = $(5x-8) \times 3/5 = ((15x-24)/5)$ liter

And quantity of sugar = $(5x - 8) \times 2/5$

$$\begin{aligned}\text{Quantity of sugar after adding 12 liter sugar} &= (5x - 8) \times \frac{2}{5} + 12 = ((10x - 16))/5 + 12 \\ &= (10x - 16 + 60)/5 = (10x + 44)/5\end{aligned}$$

According to second condition -

$$((15x - 24)/5) : (10x + 44)/5 = 1/2$$

$$\Rightarrow 2(15x - 24) = (10x + 44)$$

$$30x - 48 = 10x + 44$$

$$44 + 48 = 30x - 10x$$

$$92 = 20x$$

$$x = 4.6$$

$$\text{So, Amount of water} = 3x = 3 \times 4.6 = 13.8$$

liter **3) Answer: A**

Let, the amount of rice of Rs.5.4 per kg = x kg According to the question,

$$x \times 5.4 + 4.5 \times 10 = 5.94 \times (10 + x) \div 120 \times$$

$$100 \quad 5.4x + 45 = 4.95 \times (10 + x)$$

$$5.4x + 45 = 49.5 + 4.95x$$

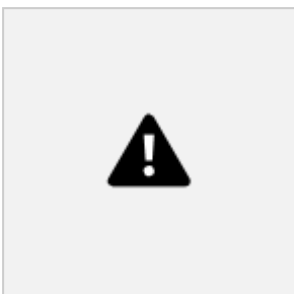
$$5.4x - 4.95x = 49.5 - 45$$

$$0.45x = 4.5$$

$$x = 10 \text{ kg}$$

4) Answer: C

According to Question -



$$(\text{Quantity of A} / \text{Quantity of B}) = 30/30$$

7) Answer: B

$$\text{Amount of milk in the mixture} = \frac{2}{3} \times 42$$

liters And the amount of milk = 28 liters

According to Question,

The total mixture after mixing the amount of water =

$$42 + 8 = 50 \text{ liters}$$

$$\text{Ratio} = 1:1$$

5) Answer: C

According to Question -



That is, both metals have to be mixed in the ratio 3:5.

6) Answer: B

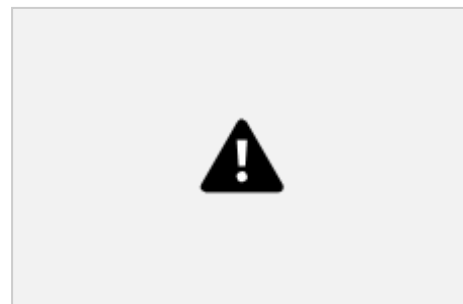
Sale price of new rice = 20.40 Rupees per kg, and profit = 20%

Hence the purchase price per kg of new rice = Sale price / (100 + profit %) × 100

$$= 20.4 / (100 + 20) \times 100 = 20.4 / 120 \times 100$$

$$= 17 \text{ Rupees per kg}$$

Now by Allegation method -



$$\text{Intended ratio} = 2:3$$

Percent of milk = quantity of milk / volume of total mixture × 100 liters

$$\text{Percent of milk} = \frac{28}{50} \times 100 \text{ liters}$$

$$\text{Milk percentage} = 56\%$$

8) Answer: C

$$\text{Intended ratio} = (2/7 + 4/7) : (5/7 + 3/7)$$

$$= 6/7 : 8/7 = 6 : 8 = 3 : 4$$

9) Answer: B

$$\text{Sugar content } (10 \times 11) / 100 = 1.1$$

Remaining mixture = 8 liters

The percentage of sugar in the remaining mixture =
 $(1.1/8) \times 100 = 13.75\%$

10) Answer: C

According to Question



Intended ratio = $20 : 10 = 2 : 1$

11) Answer: B

According to Question -



Intended ratio = $(1/10) : (1/18) = 9:5$

According to second condition - $\therefore ((28x - 21)/4) \times$
 $4/(20x + 25) = 7/9 \Rightarrow 7(20x + 25) = 9(28x - 21)$
 $140x + 175 = 252x - 189$
 $= 53: 27$

Or, W: A = 27:53

16) Answer: C

$$50)^3$$

$$175 + 189 = 252x - 140x$$

$$364 = 112x$$

$$(x = 3.25)$$

(Water = $7x = 7 \times 3.25 = 22.75$) Liter

14) Answer: A

12) Answer: A

Alcohol content in 30 liters of beer = $30 \times (5/100) =$
 $(3/2) = 1.5$ liter

Suppose the amount of water added = x
 liter By question -

$$(30 + x) \times 3/100 = 1.5$$

$$30 + x = 50 \Rightarrow x = 20 \text{ liter}$$

13) Answer: B

Suppose water and alcohol in a drum is 7x and 5x
 respectively.

Remaining total mixture after removing 9 liters =
 $(12x - 9)$ liters

Quantity of water in this mixture = $(12x - 9) \times 7/12 =$
 $((28x - 21)/4)$ liter

And the amount of alcohol = $(12x - 9) \times 5/12$ The
 amount of alcohol in the mixture again on filling 10
 liters of alcohol

$$= (12x - 9) \times 5/12 + 10 = (60x - 45)/12 + 10 = (60x - 45 + 120)/12 = (60x + 75)/12 = ((20x + 25)/4)$$



Honey content = $2/3$

15) Answer: B

I II III IV (A) Alcohol $\rightarrow 80 \ 75 \ 60 \ 50$ (W) Water
 $\rightarrow 20 \ 25 \ 40 \ 50$ A:W A:W A:W A:W

I = 80:20 II = 75:25 III = 60:40 IV = 50:50 = 4:1
 $= 3:1 = 3:2 = 1:1$ According to Question,

$$A:W = (4/5 + 3/4 + 3/5 + 1/2) : (1/5 + 1/4 + 2/5 + 1/2)$$

$$\therefore A:W =$$

$$((16 + 15 + 12 + 10)/20) : ((5 + 4 + 8 + 10)/20)$$

Amount of pure honey in the drum = 50 (1

$$-^{10} = 50 (1 - ^1_5)^3$$

$$= 50 \times (4/5) \times (4/5) \times (4/5) = 128/5 \text{ Liter}$$

$$\text{Quantity of preservatives} = 50 - 128/5$$

$$= (250 - 128)/5 = 122/5$$

$$\text{Preservative: Honey} = 122/5 : 128/5$$

$$= 61 : 64$$

17) Answer: A

Let x liters preservative be added

The amount of syrup in the beginning = The quantity of syrup in the end

$$16 \times 90 = (16 + x) \times 80$$

$$144 = 128 + 8x$$

$$144 - 128 = 8x$$

$$16 = 8x$$

$$x = 2 \text{ Liter}$$

18) Answer: B

$$\text{Total quantity of raw material} = 27 \text{ Kg}$$

$$\text{Maida and Flour Ratio} = 17 : 28$$

$$\therefore \text{Quantity of maida} =$$

$$(17 \times 27) / (17 + 28) = (17 \times 27) / 45 = 51/5 \text{ kg}$$

$$\therefore \text{Quantity of flour} =$$

$$(28 \times 27) / (17 + 28) = (28 \times 27) / 45 = 84/5 \text{ kg}$$

$$5 + \blacklozenge = ^2_5$$

21) Answer: B

$$\text{Sale price of the mixture} = \text{Rs. } 40.8 \text{ per kg and profit}$$

Suppose if (x) kg of flour is added to it,

$$\frac{51}{\frac{84}{5}} = 20\%$$

$$= 51 / (84 + 5x) = 2/5$$

$$\Rightarrow 168 + 10x = 255$$

$$\Rightarrow 10x = 255 - 168 = 87$$

$$\text{Or, } x = 8.7 \text{ kg}$$

19) Answer: A

Total price of all three types of almonds

$$= 252 \times 274 + 280 \times 197 + 316 \times 54$$

$$= 69048 + 55160 + 17064 = \text{Rs. } 141272$$

$$\text{Total value of mixture} = (274 + 197 + 54) \times 283.50$$

$$= 525 \times 283.50$$

$$= \text{Rs. } 148837.5$$

$$\text{Thus, the total profit on sales} = 148837.5 - 141272 =$$

$$\text{Rs. } 7565.50$$

20) Answer: D

According to Question -



$$\text{Cheap : costly} = 21.6 : 28.4$$

$$= 216/284 = 54/71$$

$$\approx 54/72 = 3/4$$

$$\text{Cheap: costly} = 3 : 4$$

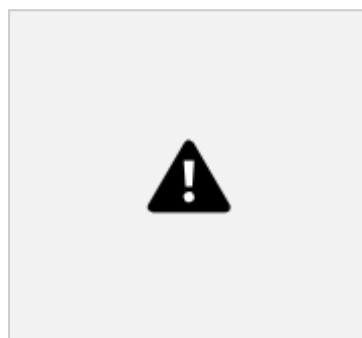
$$\text{Hence the cost price per kg of the mixture} = \text{selling}$$

$$\text{price} / (100 + \text{profit } \%) \times 100$$

$$= 40.8 / (100 + 20) \times 100 = 40.8 / 120 \times 100$$

$$= 34 \text{ rupees per kg}$$

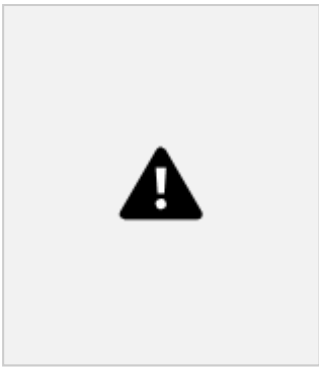
Now By allegation method-



$$\text{Intended ratio} = 2 : 3$$

22) Answer: C

According to Question



$$I : II = 1 : 5$$

23) Answer: B

Price of first type of tea = Rs.380/kg

Price of second type of tea = 420/kg

Cost price of both types of tea = (380 + 420) =
Rs.800

Sale price of both types of tea = $450 \times 2 =$
Rs.900 Profit = selling price - Cost price
 $= 900 - 800 = 100$

Profit % = profit/cost price $\times 100$
 $= 100/800 \times 100 = 12.5\%$

24) Answer: D

Cake = 1 kg = 1000

Total cake = 100%



Egg content = $1000 \times 32/100 = 320$ gm

25) Answer: A

Cost price of cow's milk = $25 \times 4 = 100$

Cost price of buffalo's milk = $35 \times$
 $6 = 210$ Total purchase price = Rs.310

In question -

selling price = (Cost price (100+P/L))/100 $\Rightarrow 370 = (310$ According to Question -

$\times (100+P\%))/100$ $3700 - 3100 = P\% \times 310$

$600/31 = P\%$

Desired ratio = 62:43

28) Answer: C

Total selling price = $37 \times 10 =$ Rs.370

P% = 19.35%

P% = 20% (Approx)

26) Answer: C

Suppose cow's milk is x part and buffalo milk is y
part.

According to Question,

$$(16x+40y)/(x+y) \times 125/100 = 30$$

$$(16x+40y)/(x+y) \times 5/4 = 30$$

$$16x+40y = 24 (x+y)$$

$$(24-16)x = (40-24)y$$

$$8x = 16y$$

$$x = 2y,$$

$$x/y = 2/1$$

$$x:y = 2:1$$

27) Answer: B

Volume of water in first drum = 4/7

And the quantity of alcohol = 3/7

Volume of water in second drum = 3/5

And the amount of alcohol = 2/5

According to the question, by mixing the two
mixtures in the ratio 1:2

$$\Rightarrow \frac{2 \times 1 + \frac{3}{5} \times 2}{7 \times 1 + \frac{2}{5} \times 2} = \frac{2 \times \frac{4}{7} + \frac{3}{5} \times \frac{2}{5}}{7 \times \frac{4}{7} + \frac{2}{5} \times \frac{2}{5}} = \frac{20+4}{15+28} = \frac{62}{43}$$



Cow's milk / buffalo milk = 15/15

Ratio = 1:1

29) Answer: A

Alcohol in the first drum = $3 / (1 + 3) =$

$3/4$ Alcohol in another drum = $5 / (3 + 5) =$

$5/8$ Alcohol in new mixture = $2 / (1 + 2) =$



$2/3$

$= 1/24 : 1/12 = (1:2)$

30) Answer: A

New ratio of sugar and water =

$[5/8 + 7/16] : [3/8 + 9/16] = 17/16 : 15/16 = 17:15$ **31)**

Answer: B

Let the initial quantity of mixture be 'x'

litres. Initial quantity of diesel = $0.8x$ litres

Initial quantity of petrol = $0.2x$ litres

According to question,
and $3x$ litres respectively.

35) Answer: A

Let, amount of water and alcohol mixed initially be
' $7x$ ' ml and ' $2x$ ' ml, respectively.

So, $(7x - 35 + 15)/(2x - 10) = 4/1$

$7x - 20 = 8x - 40$

$x = 20$

$$2(0.2x + 18) = 0.8x$$

$$0.4x + 36 = 0.8x$$

$$0.4x = 36, x = 90 \text{ litres}$$

So, the initial quantity of mixture = 90 litres

32) Answer: B

Let the initial quantity of milk and water be $4x$ litres

According to question,

$$4x / (3x + 4) = 6/5$$

$$20x = 18x + 24$$

$$2x = 24, x = 12$$

So, the initial quantity of milk in the mixture = $4x =$
48 litres

33) Answer: D

Quantity of milk initially = 75% of 60 = 45

litres Quantity of water initially = $60 - 45 = 15$

litres Let the quantity of water added be 'x'.

$$45 = 50\% \text{ of } (60 + x)$$

$$90 = 60 + x$$

$$x = 30 \text{ litres}$$

34) Answer: A

According to question,

$$(100 - x)\% \text{ of } 80 - x\% \text{ of } 80 = 16$$

$$(100 - 2x)\% \text{ of } 80 = 16$$

$$100 - 2x = 20$$

$$2x = 80, x = 40$$

So, the value of 'x' = 40%

So, the amount of water mixed initially = $7x = 140$
ml

36) Answer: B

Quantity of milk in the mixture initially = $2079/21 =$
99 litres

Quantity of water in the mixture initially = $(99/0.55)$
 $\times 0.45 = 81$ litres

Let the additional amount of water used be 'x'.

$$x + 81 = 99$$

$$x = 18 \text{ litres}$$

37) Answer: A

$$\text{Quantity of water initially} = 96 \times 3/8 = 36$$

$$\text{litres Quantity of milk initially} = 96 \times 5/8 = 60$$

$$\text{litres Final ratio} = 60: (36 + 4) = 60:40 = 3:2$$

38) Answer: C

Let the initial quantities of milk and water in the vessel be '13x' liters and '5x' liters, respectively.

$$\text{Quantity of milk taken out} = (13/18) \times 72 = 52 \text{ liters}$$

$$\text{Quantity of water taken out} = 72 - 52 = 20 \text{ liters}$$

According to question,

$$(13x - 52)/(5x - 20 + 51) = 8/7$$

$$91x - 364 = 40x + 248$$

$$51x = 612$$

$$x = 12$$

$$\begin{aligned} \text{So, the initial quantity of water in the vessel} &= 12 \times 5 \\ &= 60 \text{ liters} \end{aligned}$$

39) Answer: A

Let the initial quantity of milk and water be 4x and 3x respectively

Required initial quantity of mixture in the container =

$$7x = 84 \text{ litres}$$

42) Answer: C

Let the initial quantity of milk and water be 7x and 6x litres, respectively.

$$\text{So, } 7x = 6x + 6$$

$$x = 6$$

$$\begin{aligned} \text{So, required initial quantity of mixture} &= 13x = 78 \\ &\text{litres} \end{aligned}$$

43) Answer: D

Let the amount of water added be 'x' litres. Amount of milk in mixture initially = $(5/8) \times 360 = 225$ litres

$$\begin{aligned} \text{Amount of water in mixture initially} &= (3/8) \times 360 = \\ &135 \text{ litres} \end{aligned}$$

$$4\diamond\diamond + 7$$

$$\begin{aligned} 3\diamond\diamond &= 5_2 \\ 8x + 14 &= 15x \end{aligned}$$

$$7x = 14$$

$$x = 2$$

Amount of water in the initial and final mixture is same i.e. $3x = 6$ liters

40) Answer: B

Let the quantity of mixture initially be 'x' litres. According to question,

$$0.2x + 25 = 40$$

$$0.2x = 15, x = 75$$

So, the quantity of petrol initially = 80% of 75 = 60 litres

41) Answer: D

Let the initial quantity of milk and water be 4x litres and 3x litres, respectively.

$$4x/(3x + 4) = 6/5$$

$$20x = 18x + 24$$

$$2x = 24, x = 12$$

According to question,

$$225 = 135 + x$$

$$x = 225 - 135$$

$$x = 90 \text{ litres}$$

44) Answer: C

Let the quantity of rice 1, rice 2 and rice 3 mixed be '5x', '3x' and '2x' kg, respectively.

$$\begin{aligned} \text{Price per kg of the mixture} &= (44 \times 5x + 48 \times 3x + 60 \\ &\times 2x)/(5x + 3x + 2x) = \text{Rs. } 48.40 \end{aligned}$$

45) Answer: A

Let the quantity of liquid A and liquid B initially in container P be '5x' litres and '4x' litres respectively.

$$\begin{aligned} \text{Quantity of liquid A in container Q initially} &= (2/3) \times \\ &12 = 8 \text{ litres} \end{aligned}$$

$$\begin{aligned} \text{Quantity of liquid B in container Q initially} &= 12 - 8 \\ &= 4 \text{ litres} \end{aligned}$$

Quantity of liquid B in the resultant mixture in container Q = 7 litres

$$0.25 \times 4x + 4 = 7$$

$$x + 4 = 7$$

$$x = 3$$

So, quantity of liquid A in container P initially = $5x = 15$ litres

46) Answer: C

Let the initial quantities of milk and water in the vessel be $11x$ liters and $5x$ liters respectively. When 64 liters mixture is taken out,

$$\text{Quantity of milk taken out} = (11x/16x) \times 64 = 44$$

liters

$$\text{Quantity of water taken out} = 64 - 44 = 20$$

liters According to question,

$$(11x - 44)/(5x - 20 + 9) = 7/4$$

$$44x - 176 = 35x - 77$$

$$9x = 99$$

$$x = 11$$

So, the initial quantity of mixture in the vessel = $16x = 16 \times 11 = 176$ liters

47) Answer: C



$$X : Y = 1 : 3$$

50) Answer: D



$$= 1 : 3$$

Let the quantity of milk and water in the mixture be '5x' litres and '4x' litres, respectively.

According to question,

$$0.8 \times 5x = 0.8 \times 4x + 4$$

$$4x = 3.2x + 4$$

$$0.8x = 4$$

$$x = 5$$

Initial quantity of mixture = $5x + 4x = 9x = 9 \times 5 = 45$ litres

48) Answer: C

Let the amount of liquid A and liquid B in container P be '2x' litres and '5x' litres, respectively. And, let the amount of liquid A and liquid B in container Q be '3y' litres and '4y' litres, respectively. In container R,

$$\text{Amount of liquid A} = 2x + 3y$$

$$\text{Amount of liquid B} = 5x + 4y$$

According to question,

$$(2x + 3y)/(5x + 4y) = 2/3$$

$$3(2x + 3y) = 2(5x + 4y)$$

$$6x + 9y = 10x + 8y$$

$$y = 4x$$

So, required ratio = $2x : 3y = 2x : 12x = 1:6$

49) Answer: C