

1) The ratio of incomes of A and B last year was 4:5. The ratio of their own incomes of last year and this year are 6:7 and 2:3 respectively. If the total sum of their present incomes is Rs. 96360, find the last year income of A?

- A) 31680 B) 33600 C) 35000 D) 30720

$$\frac{96360}{73} \times 24 = 24$$

$$\begin{aligned} A &: B \\ 4 &: 5 \\ 4 \times \frac{7}{6} & \quad 5 \times \frac{3}{2} \\ \hline & \quad \text{LCM} = 6 \end{aligned}$$

$$\begin{aligned} A &: B \\ 24 &: 30 \\ \downarrow & \quad \downarrow \\ 24 \times 7 & \quad 30 \times 3 \\ \hline 168 & \quad 90 \\ \hline \text{Sum} & \quad 258 \\ 73 & \quad \end{aligned}$$

$$\begin{aligned} 73 &\rightarrow 96360 \\ 1 &\rightarrow \frac{96360}{73} \times 24 = 24 \\ 24 &\rightarrow \frac{96360}{73} \times \frac{24}{3} = 40 \end{aligned}$$

2) The ratio of the incomes of A and B last year was 4:3, respectively. The ratios of their individual incomes of the last year and the present year are 3:4 and 5:6, respectively if their total income for the present year is Rs. 8.04 lakh then the income of B last year was

- A) Rs. 3.6 lakh. B) Rs 2.4 lakh C) Rs 2.7 lakh. D) Rs 2.8 lakh

$$\begin{aligned} A &: B \\ 4 &: 3 \\ A &= 14 \times \frac{4}{3} : 3 \times \frac{6}{5} \\ \hline & \quad \text{LCM} = 15 \end{aligned}$$

$$\begin{aligned} A &: B \\ 60 &: 45 \\ \downarrow & \quad \downarrow \\ 60 \times \frac{4}{3} & \quad 45 \times \frac{6}{5} \\ \hline 80 & \quad 54 \\ \hline A + B &= 134 \end{aligned}$$

$$\begin{aligned} 134 &\rightarrow 8.04 \\ 1 &\rightarrow \frac{8.04}{134} \\ 45 &\rightarrow \frac{8.04}{134} \times 45 = \frac{270}{100} = 2.7 \end{aligned}$$

3) Before a battle the ratio of tanks to planes in an army was 5: 3. During the war 1000 tanks were destroyed and 800 planes were destroyed. The ratio of tanks to planes became 2: 1. What is the number of tanks after the war ?

A) 2000

B) 1000

C) 3000

D) 4000

$$\begin{array}{l} T : P \\ 5 : 3 \\ \hline 2 : 1 \\ \hline 1000 \quad 800 \\ \hline 1000 \quad 1600 \\ \hline 600 \end{array}$$

$$\begin{array}{l} 1 \rightarrow 600 \\ 5 \rightarrow 600 \times 5 \\ = 3000 \\ - 1000 \\ \hline 2000 \end{array}$$

$$\begin{array}{l} T : P \\ 5 : 3 \\ \hline 2 : 1 \\ \hline 1000 \quad 800 \\ \hline 3000 \quad 4000 \\ \hline 1000 \\ 1 \rightarrow 1000 \\ 2 \rightarrow 2000 \end{array}$$

4) How many job applicants had applied if the ratio of selected to unselected was 19: 17. If 1,200 less had applied and 800 less selected, then the ratio of selected to unselected would have been 1: 1

A) 6000

B) 7200

C) 8400

D) 4800

$$\begin{array}{l} S : U \\ 19 : 17 = 36 : 19 \\ 1 : 1 \\ 2 : 1 \end{array}$$

$$\begin{array}{l} T : S \\ 36 : 19 \\ \hline 2 : 1 \\ \hline 1200 \quad 800 \\ \hline 1200 \quad 1600 \\ \hline 400 \end{array}$$

$$\begin{array}{l} 36K - 1200 \\ \hline 19K - 800 \\ \hline 36K - 1600 = 36K - 1200 \\ 2K = 400 \\ K = 200 \\ 36K = 200 \times 36 = 7200 \end{array}$$

$$\begin{array}{l} 2 \rightarrow 400 \\ 1 \rightarrow 200 \\ 36 \rightarrow 7200 \end{array}$$

5) In a regiment the ratio between the officers to soldiers was 4:43 in a battle 8 officers martyred and 7 soldiers join the regiment and the ratio becomes 2:23 find the number of soldiers after the battle?

(a) 1610.

(b) 1426

(c) 1386.

(d) 1472

$$\begin{array}{r} 0 \quad 92 \quad 86 \\ 4 \cdot 43 \\ 2 \cdot 23 \\ -8 \\ -184 \\ \hline 198 \end{array}$$

$$\begin{array}{l} 6 \rightarrow 198 \\ 1 \rightarrow 33 \\ 43 \rightarrow 33 \times 43 \\ \quad 3 \times 11 \times 43 \\ \quad 129 \times 11 \\ \quad 1419 \\ \quad 17 \\ \hline 1426 \end{array}$$

6) What is the number of candidates who had applied if the ratio of selected to unselected was 23:35. If 62 less had applied and 27 less selected the ratio of selected to unselected would have been 9:14

(a) 612

(b) 522

(c) 546.

(d) 638

$$\begin{array}{l} S : U \\ 23 : 35 \\ \hline \end{array}$$

$$\begin{array}{l} T : S \\ 58 : 27 \\ \hline \end{array}$$

$$\begin{array}{l} 23 \quad 9 \\ 62 \quad 27 \end{array}$$

$$\begin{array}{l} 9 \times 62 - 23 \times 27 \\ 9 (62 - 69) \\ \hline 7 \\ \hline 63 \end{array}$$

$$\begin{array}{l} 7 \rightarrow 63 \\ 1 \rightarrow 9 \\ 58 \rightarrow 9 \times 58 \\ \quad 522 \end{array}$$

7) In an army selection the % of selected candidate was 60%. If 70 more had applied and 50 less selected then the % of unselected candidate is 60%. How many candidates had applied for the process?

- (a) 390 (b) 480. (c) 380. (d) 234

$60\% = \frac{3}{5}$
 $S \rightarrow 390$
 $I \rightarrow 78$
 $S \rightarrow 78 \times 5$
 390

$T : S = 10 : 15$
 $S : 3$
 $S : 2$
 $+70 -50$
 $140 -250$
 390

8). The ratio of milk and water in a vessel is 4:7. If 25ltr water is added then ratio becomes 6:13. Find the initial quantity of mixture (in ltr)?

- (a) 150 (b) 132. (c) 165. (d) 175

$M : W$
 $4 : 7$

$M : W$
 $12 : 21$
 $12 : 26$
 $S \rightarrow 25$
 $I \rightarrow 5$
 $33 \rightarrow 5 \times 33$
 $= 165$

$M : W$
 $3 \times 4 : 7$
 $2 \times 6 : 13$

$M : W$
 $4K : 7K + 25$
 $52K = 42K + 150$
 $10K = 150$
 $K = 15$
 $11K = 15 \times 11$
 $= 165$

9) 200 liters of a mixture contains milk and water in the ratio 17: 3. After the addition of some more milk to it, the ratio of milk to water in the resulting mixture becomes 7: 1. The quantity of milk added to it was?

- (a) 20 liters. (b) 40 liters. (c) 60 liters. (d) 80 liters

$$\begin{array}{l}
 M:W \\
 17:3 \\
 \text{---} \\
 7:1 \times 3 \\
 \hline
 21:3
 \end{array}$$

(14) ✓

$$\begin{array}{l}
 20 \rightarrow 200 \\
 1 \rightarrow 10 \\
 4 \rightarrow 40
 \end{array}$$

10) The ratio of milk and water in a vessel is 8:5. If we added 441tr milk and 441tr water then quantity of milk becomes 28.56% more than water. Find the initial quantity of water?

- (a) 481tr. (b) 45ltr. (c) 40ltr (d) 60ltr

$$\begin{array}{l}
 M:W \\
 8:5 \\
 \times 2 \\
 \hline
 16:10 \\
 9:7 \\
 \hline
 27:21
 \end{array}$$

$$\begin{array}{l}
 11 \rightarrow 44 \\
 1 \rightarrow 4 \\
 10 \rightarrow 40
 \end{array}$$

$$28.56\% \div \frac{28}{7}$$

11) The ratio of milk and water in a vessel is 2:3 by chemical process if we extract some water then ratio becomes 5:7 and quantity of mixture reduced to 36ltr, then find how much quantity of water was extracted?

- (a) 1ltr. (b) 1.5ltr. (c) 1.25ltr. (d) 1.15ltr

$$\begin{aligned} &M:W \\ &5 \times (2:3) \\ &2 \times (5:7) \end{aligned}$$

$$\begin{aligned} &M:W \\ &10:15 \\ &10:14 \end{aligned}$$

$$\begin{aligned} 24 &\rightarrow 36 \\ 1 &\rightarrow \frac{36}{24} = 1.5 \end{aligned}$$

12) A vessel is full of 90ltr milk, 18ltr milk is taken out and replaced by water and again this process is repeated 2 times, the amount of milk left after the 3rd replacement is?

- (a) 11.52ltr. (b) 46.08ltr. (c) 23.04ltr. (d) 69.12ltr

$$\frac{18}{90} = \frac{1}{5}$$

$$\begin{aligned} O.M. : N.M. \\ 5^3 : 4^3 \\ 125 : 64 \end{aligned}$$

$$\begin{aligned} 125 &\rightarrow 90 \\ 1 &\rightarrow \frac{90}{125} \\ 64 &\rightarrow \frac{90}{125} \times 64 = 46.08 \end{aligned}$$

13) A vessel full of 1600ltr milk. A person draws out 25% of milk from the vessel and replaced with water. He has repeated the same process 2 times more. Find the final amount of milk in the vessel?

- (a) 675L. (b) 750L. (C) 800L. d) 1200L

$$25\% = \frac{1}{4}$$

$$0.75 : 1$$

$$(4)^3 : (3)^3$$

$$64 : 27$$

$$\begin{array}{r} 64 \rightarrow 1600 \\ 1 \rightarrow 1600 \end{array} \times 27$$

$$675L$$

14) A jar is filled with milk. A person replaces 25% of milk with water. He repeats the same process 5 times and as a result there is 1458ml of milk left in the jar. The remaining part of jar is filled with water. The initial quantity of milk in the jar was?

- (a) 4.096L. (b) 6.144L. (c) 5.12L. (d) 9.216L

$$25\% = \frac{1}{4}$$

$$4^5 : 3^5$$

$$1024 : 243$$

$$243 \rightarrow 1458$$

$$1024 \rightarrow \frac{1458}{243} \times 1024$$

$$\begin{array}{r} 64 \\ 4 \\ \hline 256 \\ \times 4 \\ \hline 1024 \end{array} \quad 243$$

$$2$$

15) A drum contains 165 litres of ethanol. 44 litres of this liquid is removed and replaced with water. 44 litres of this mixture is again removed and replaced with water. How much water (in litres) is present in this drum now?

- (a) 80.55 (b) 88.73 (c) 76.26 (d) 71.66

$$\frac{44}{165} = \frac{4}{15}$$

$$\begin{aligned} \text{O.M.} &: \text{N.M.} \\ (15)^2 &: (11)^2 \\ \checkmark 225 &: 121 \end{aligned}$$

$$\begin{array}{r} 225 \\ - 121 \\ \hline 104 \end{array}$$

$$225 \rightarrow 165$$

$$1 \rightarrow \frac{165}{225} = \frac{11}{15}$$

$$104 \rightarrow \frac{165}{225} \times 104 = \frac{1144}{15}$$

16) A jar contains a mixture of 175 ml water and 700 ml alcohol. Rohit takes out 10% of the mixture and substitutes it by water of the same amount. The process is repeated once again. The percentage of water in the mixture is now ?

- (a) 35.2 (b) 30.3 (c) 40.5 (d) 25.4

$$\frac{175}{875} + \frac{700}{875}$$

$$\frac{700}{875} \times \frac{9}{10} \times \frac{9}{10}$$

$$\frac{81}{100} \times \frac{4}{100} = \frac{324}{10000}$$

$$\frac{64.8}{100}$$

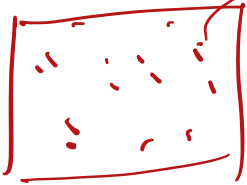
$$64.8\%$$

$$35.2\%$$

$$\frac{4 \times 9 \times 9}{5 \times 100} = \frac{64.8}{100 \times 10}$$

17) . 24 liters are drawn from a vessel full of wine, then filled with water. This operation is performed 3 times more. The ratio of quantity of wine now left in vessel to that of water is 16: 65. How much wine did vessel hold initially?

- (a) 48. (b) 72. (c) 96. (d) 120



$$25\% = \frac{1}{4}$$

$$(4) \times 24 = 96$$

$$\sqrt{16:65}$$

$$1 \rightarrow 24$$

$$3 \rightarrow 72$$

wine : water

$$16 : 65$$

original wine : present wine

$$\sqrt{81} : \sqrt{16}$$

$$3 : 2$$

18) From a container of wine, a thief has stolen 15 lit of wine and replaced it with same quantity of water. He again, repeated the same process. Thus in 3 attempts, ratio of wine and water becomes 343: 169, Initial amount of wine.

- (c) 105. (a) 90. (b) 135. (d) 120

wine : water

$$343 : 169$$

original wine : present wine

$$\sqrt[3]{512} : \sqrt[3]{343}$$

$$8 : 7$$

$$1 \rightarrow 15$$

$$8 \rightarrow 15 \times 8$$

19) A vessel is full of vinegar. 35L of vinegar is taken out & replaced by water. This process is repeated three more times. Find the final amount of vinegar in the vessel if at the end the ratio of vinegar and water becomes 625:671.

- (a) 210L. (b) 70.6L. (c) 175.6L (d) 101.27L

$V:W$
 $625:671$

$I.V : P.V.$
 $1296 : 625$
 $\sqrt[4]{(6)^4} : \sqrt[4]{(5)^4}$
 $6 : 5$
 $1 \rightarrow 3^5$
 $6 \rightarrow 6 \times 3^5$
 210

$V : P.V$
 $1296 : 625$
 $1296 \rightarrow 210$
 $1 \rightarrow \frac{210}{1296}$
 $625 \rightarrow \frac{210}{1296} \times 625$
 210
 35×625
 216
 7×3125
 216
 21675
 216

20) From a cask filled with wine, 108.75 litres are first drawn and replaced with water. From this mixture 87 litres are drawn and replaced with water. The ratio of wine to water in the cask is now 3:2. How many litres of wine did the cask initially hold?

- (a) 522. (b) 348. (c) 470. (d) 435

$I.B.$
 $W:Water = 3:2$

$\frac{\text{Final Q}}{\text{Initial Q}} = \left(1 - \frac{x}{C}\right) \left(1 - \frac{y}{C}\right)$
 $\frac{3}{5} = \left(1 - \frac{108.75}{n}\right) \left(1 - \frac{87}{n}\right)$
 $\frac{3}{5} = \left(1 - \frac{108.75}{435}\right) \left(1 - \frac{87}{435}\right)$
 $\frac{3}{5} = \left(1 - \frac{1}{4}\right) \left(1 - \frac{1}{5}\right)$
 $= \frac{3}{4} \times \frac{4}{5} = \frac{3}{5}$

108.75
 $108 + \frac{75}{4}$
 435

21) A vessel contains a solution of two liquids A and B in the ratio 5:3. When 10 litres of the solution is taken out and replaced by the same quantity of B, the ratio of A and B in the vessel becomes 10:11. The quantity (in litres) of the solution, in the vessel was

- (a) 42. (b) 48. (c) 52. (d) 44

$$\begin{aligned} A : B &= 5 : 3 \\ 105 : 63 &= 5 \times 21 \\ 10 : 11 &= 21 \times 8 \\ 80 : 88 & \\ \frac{80}{8} &\rightarrow \frac{10}{1} \\ 1 &\rightarrow \frac{1}{8} \quad (42) \\ 168 &\rightarrow 168 \times \frac{1}{4} \end{aligned}$$

$$\begin{aligned} A : B &= 5 : 3 \\ 8 &\rightarrow 10 \\ 1 &\rightarrow \frac{10}{8} \\ A : B &\rightarrow \frac{10}{8} \times 5 \\ &= \frac{25}{4} \\ B &= \frac{16}{4} \\ \frac{5}{8} \times K &= \frac{10}{21} \\ K &= \frac{16}{21} \\ \text{replace} &= \frac{3}{21} \\ \frac{5}{21} &\rightarrow \frac{10}{2} \\ \frac{1}{21} &\rightarrow \frac{2}{42} \end{aligned}$$

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

- (a) 14ltr. (b) 21ltr. (c) 28ltr. (d) 35ltr

$$\begin{aligned} \frac{7}{12} \times K &= \frac{7}{18} \\ K &= \frac{3}{4} \\ \text{replace} &= \frac{1}{4} \times 9 \\ &= \frac{9}{4} \\ &= 2.25 \\ &= 36 \end{aligned}$$

$$\begin{aligned} 12 &\rightarrow 36 \\ 1 &\rightarrow 3 \\ 7 &\rightarrow 21 \end{aligned}$$

23) 46. The ratio of milk and water in a mixture is 7:5. How much part of the mixture should be replaced by water so that ratio of milk and water is 2:3 ?

- (a) 11/35. (b) 11/25. (c) 13/24. (d) 13/36

$$\frac{7}{12} \times K = \frac{2}{5}$$

$$K = \frac{24}{35}$$

replaced

$$\frac{11}{35}$$

24) The ratio of milk and water in a mixture is 2:1. How much part of the mixture should be replaced by water so that ratio of milk and water is 5:3 ?

- (a) 1/14. (b) 1/6. (c) 1/8. (D) 1/16

$$\frac{2}{3} \times K = \frac{5}{8}$$

$$K = \frac{15}{16}$$

$$\frac{1}{16}$$

25) A jar contains a mixture of two liquids A and B in the ratio 3:1. When 24 litres of the mixture is taken out and 9 litres of liquid B is poured into the jar, the ratio becomes 3:4. How many litres of liquid A was contained in the jar?

- (a) 30ltr. (b) 27ltr. (c) 21ltr. (d) 24ltr.

A : B

3 : 1

-24

A : B

3 : 1

3 : 4

3 → 9
1 → 3
4 → 12

Initially

12 + 24

36

4 → 36

1 → 9

3 → 27