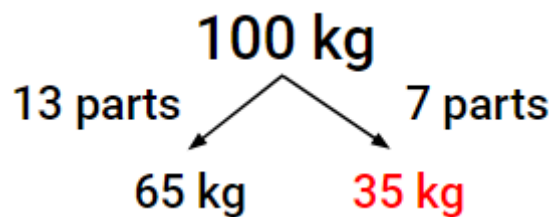| Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	MIXTURE AND ALLIGATION	Last updated on	24 January 2024

CONCEPT 1 – CONCENTRATION

1)The ratio of lead and tin in brass is 13:7. How much zinc will be there in 100 kg of brass?

    a) 35 kg.
    b) 65 kg.
    c) 55 kg.
    d) 20 kg.

ANS: a) 35 kg.

Explanation:

100 kg

13 parts   7 parts

65 kg   35 kg

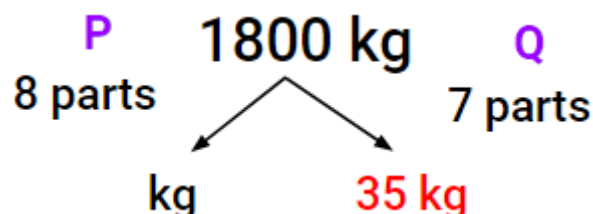2)The ratio of P and Q in the alloy is 8 : 7. The alloy is made up of only P and Q.How much Q will be there in 1800 kg of that alloy?

    a) 1150 kg.
    b) 1260 kg.
   c) 1320 kg.
    d) 1210 kg.

ANS: b) 1260.

Explanation:

P   1800 kg   Q

8 parts   7 parts

kg   35 kg

IT Support and Development Training Programme
Creating Employable Engineers and Entrepreneurs

Selvam College of Technology

Accredited by NAAC with "A" Grade, UGC Recognized 2(f) Status,
An ISO 9001:2015 Certified Institution, Approved by AICTE - New Delhi, Affiliated to Anna University - Chennai

PONNUSAMY NAGAR, SALEM ROAD(NH-44), NAMAKKAL - 637003. TAMILNADU.
Mobile: 9942099122, 9942099109, Web: www.selvamtech.edu.in

Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	MIXTURE AND ALLIGATION	Last updated on	24 January 2024

3) Concrete contains 9 parts of gravel, 2 parts of sand and 6 parts of lime.What will be the difference(in kg) in the quantities of sand and gravel in 136 kg of concrete?

    a) 32 kg.
    b) 24 kg.
    c) 65 kg.
    d) 56 kg.

ANS:d) 56 kg.

Explanation:
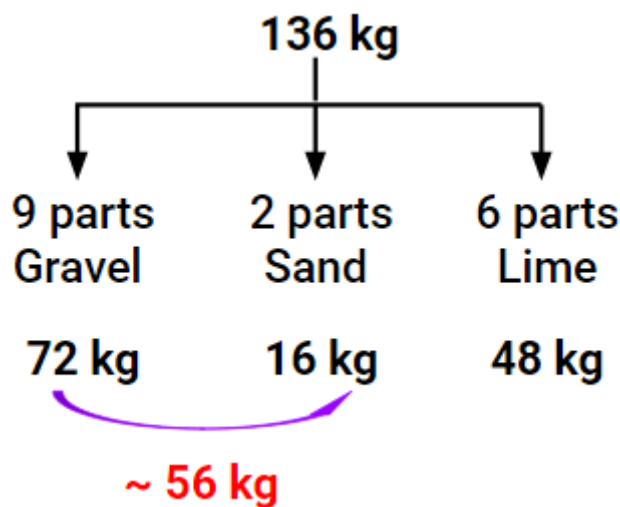
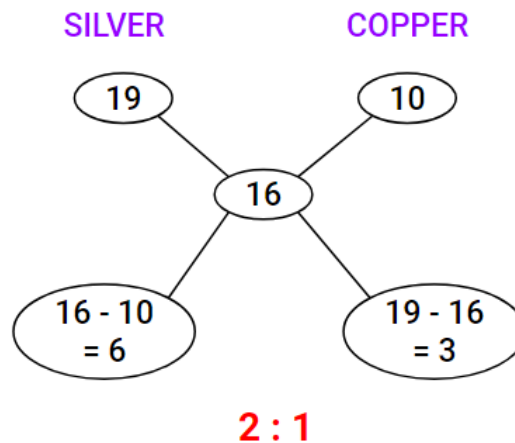| Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	MIXTURE AND ALLIGATION	Last updated on	24 January 2024

CONCEPT 2 – RULE OF ALLIGATION

4) Silver is 19 times as heavy as water and Copper is 10 times as heavy as water. In what ratio should these be mixed to get an alloy 16 times as heavy as water?

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

ANS: d) 2:1.

Explanation:

SILVER   COPPER

19   10

16

16 - 10 = 6   19 - 16 = 3

2 : 1

Selvam College of Technology

Accredited by NAAC with "A" Grade, UGC Recognized 2(f) Status,
An ISO 9001:2015 Certified Institution, Approved by AICTE - New Delhi, Affiliated to Anna University - Chennai

PONNUSAMY NAGAR, SALEM ROAD(NH-44), NAMAKKAL - 637003. TAMILNADU.
Mobile: 9942099122, 9942099109, Web: www.selvamtech.edu.in

Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	MIXTURE AND ALLIGATION	Last updated on	24 January 2024

CONCEPT 3 – APPLICATIONS OF ALLIGATION
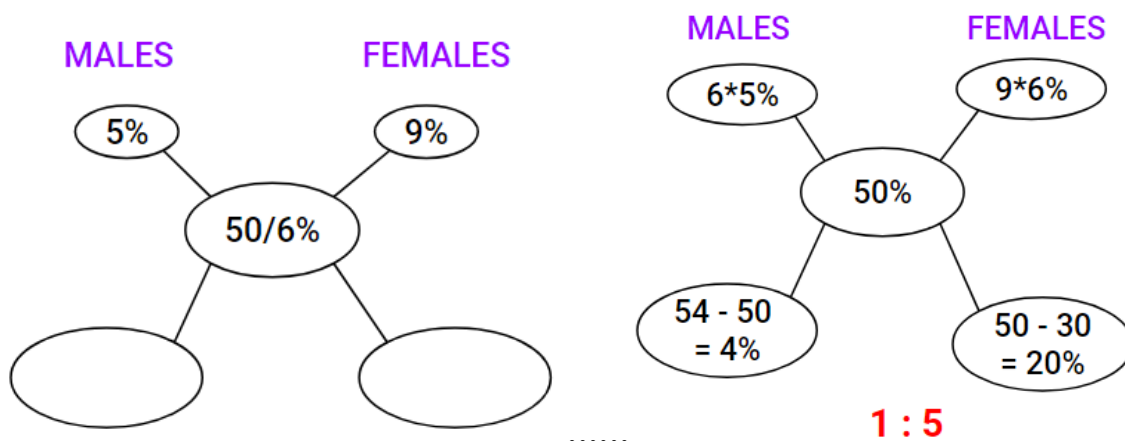
1.ALLIGATION IN POPULATION RELATED QUESTIONS.

5) The population of a town is 6000. If males increase by 5% and females increase by 9% then the population will become 6500 after 1 year. Find the initial ratio of males and females?

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

ANS: b) 1:5.

Explanation:

Overall increase in population = $\dfrac{500}{6000} * 100 = \dfrac{50}{6}$ %

......

1 : 5

Accredited by NAAC with "A" Grade, UGC Recognized 2(f) Status,
An ISO 9001:2015 Certified Institution, Approved by AICTE - New Delhi, Affiliated to Anna University - Chennai
PONNUSAMY NAGAR, SALEM ROAD(NH-44), NAMAKKAL - 637003. TAMILNADU.
Mobile: 9942099122, 9942099109, Web: www.selvamtech.edu.in

Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	MIXTURE AND ALLIGATION	Last updated on	24 January 2024

2.ALLIGATION IN INCOME RELATED QUESTIONS.

6) A man spends 75% of his income. If his income is increased by 20% and expenditure increased by 10% . Then find % change in savings.

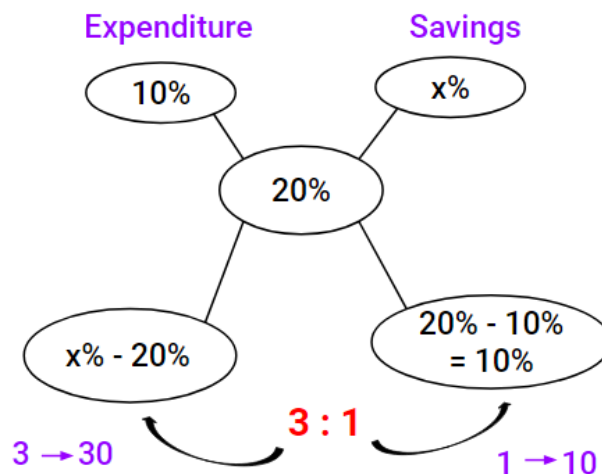- a) 40%.
- b) 50%.
- c) 60%.
- d) 55%.

ANS: b) 50%.

Explanation:

$$75\% = \frac{3}{4} \longrightarrow \text{Expenditure} \longrightarrow \text{Income}$$

Therefore, Expenditure : Savings = 3 : 1

Therefore , x% - 20 = 30

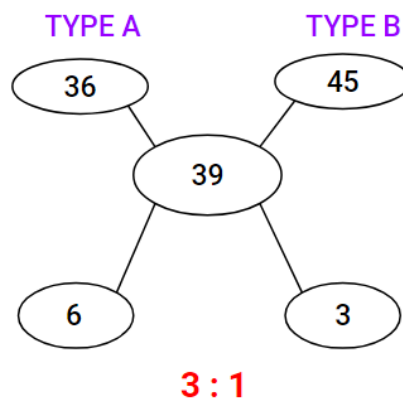Increase in savings, x% = 50%.

3.ALLIGATION IN PROFIT, LOSS AND DISCOUNT.

7) Cost price of type A sugar is 36 Rs./Kg and type B sugar is 45 Rs/Kg. In what ratio these types of sugar should be mixed to get a mixture worth 39 Rs./Kg.

- a) 3:1.
- b) 2:1.
- c) 5:1.
- d) Such a mixture is not possible.
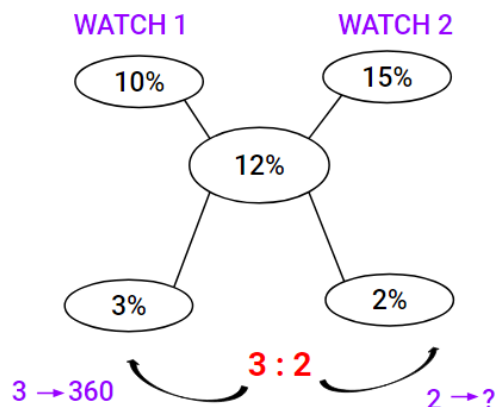
ANS: a) 3:1.

Explanation:

Accredited by NAAC with "A" Grade, UGC Recognized 2(f) Status,
An ISO 9001:2015 Certified Institution, Approved by AICTE - New Delhi, Affiliated to Anna University - Chennai

PONNUSAMY NAGAR, SALEM ROAD(NH-44), NAMAKKAL - 637003. TAMILNADU.
Mobile: 9942099122, 9942099109, Web: www.selvamtech.edu.in

Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	MIXTURE AND ALLIGATION	Last updated on	24 January 2024

8) First watch is sold at 10% profit and the 2nd watch is sold at 15% profit and the overall profit on both the watches is 12% if the cost price of the first watch is Rs. 360. Find the cost price of a second watch ?

    a) Rs.360.
    b) Rs.300.
    c) Rs.230.
    d) Rs.240.

ANS: d) Rs.240.

Explanation:

3 UNITS = Rs. 360

1 UNIT = Rs. 120

Cost Price of second watch = 2 UNITS = Rs.240

IT Support and Development Training Programme
Creating Employable Engineers and Entrepreneurs

9) A trader has 40 kg of rice, a part of which he sells at 28%.Profit and the rest at 12% loss. on the whole his loss is 8%. What is the quantity sold at 28% profit and that at 12% loss?

   a) 5 kg, 35 kg.
   b) 36 kg, 4 kg.
   c) 4 kg, 36 kg.
   d) 35 kg, 5 kg.

ANS: c) 4 kg, 36 kg.

Explanation:

RICE 1   RICE 2

+28%   -12%

        -8%

4%   36%
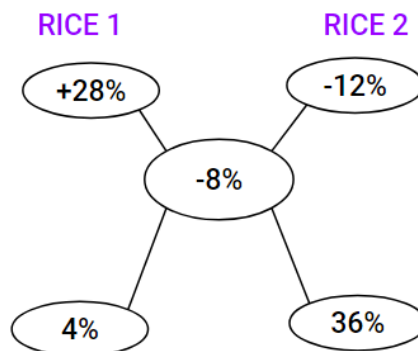
1 : 9

10 units = 40 kg.

1 unit = 4 kg.

9 units = 4 × 9 = 36 kg.

Quantities sold at 28% profit and 12% loss are 4 kg and 36 kg respectively.

![Selvam College of Technology logo]

Selvam College of Technology

Accredited by NAAC with "A" Grade, UGC Recognized 2(f) Status,
An ISO 9001:2015 Certified Institution, Approved by AICTE - New Delhi, Affiliated to Anna University - Chennai

PONNUSAMY NAGAR, SALEM ROAD(NH-44), NAMAKKAL - 637003. TAMILNADU.
Mobile: 9942099122, 9942099109, Web: www.selvamtech.edu.in

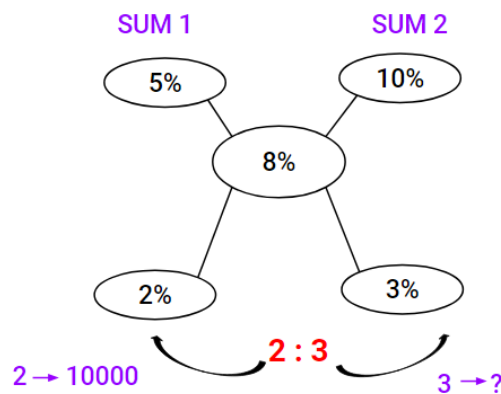| Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	MIXTURE AND ALLIGATION	Last updated on	24 January 2024

4.ALLIGATION IN SIMPLE INTEREST:

10) Rs. 10,000 is lent at 5% per annum simple interest and Rs. x is lent at 10% p.a. If the overall rate of interest is 8% then find the value of x.

  a) Rs.10000.
  b) Rs.15000.
  c) Rs.20000.
  d) Rs.18000.

ANS: b) Rs.15000.

Explanation:

2 UNITS = Rs. 10000

1 UNIT = Rs. 5000
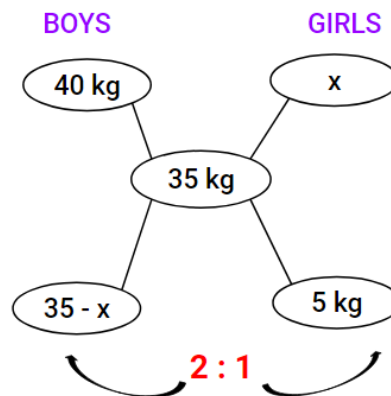
Second Sum = 3 UNITS = Rs.15000.

5.ALLIGATION IN AVERAGE:

11) In a class, The ratio of girls to boys is 1 : 2. If the average weight of boys is 40 kg and the average weight of the boys and girls are 35 kg, then the average weight of girls?

   a) 22 kg.
   b) 40 kg.
   c) 35 kg.
   d) 25 kg.

ANS: d) 25 kg.

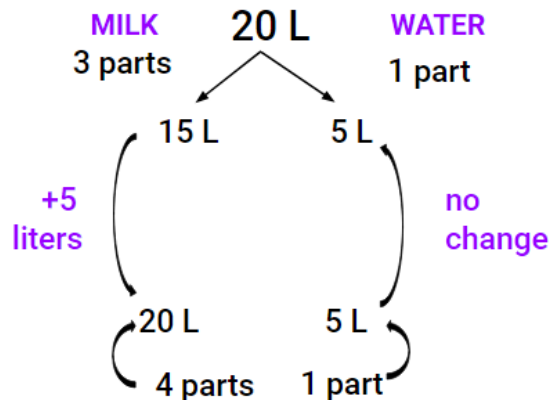Explanation:

1 unit = 5 kg.

35 - x = 15 ; x = 25 kg.

CONCEPT 4 – INCREASE / DECREASE OF A MIXTURE

12) 20 Litres of a mixture contains milk and water in the ratio 3 : 1. Then the amount of milk to be added to the mixture so as to have milk and water in ratio 4 :1 is

   a) 6 L
   b) 5 L
   c) 7 L
   d) 4 L

ANS: b) 5 L.

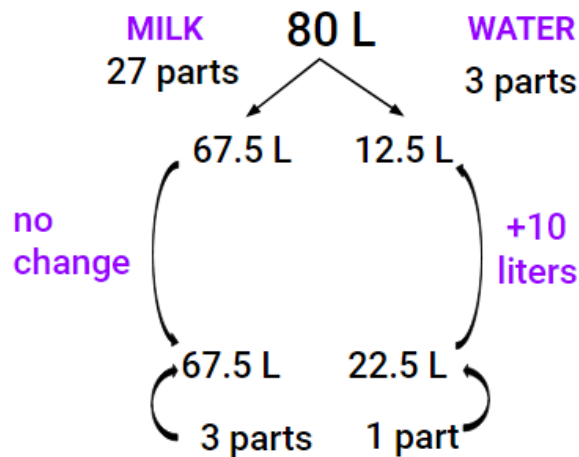Explanation:

![Selvam College of Technology]

Selvam College of Technology

Accredited by NAAC with "A" Grade, UGC Recognized 2(f) Status,
An ISO 9001:2015 Certified Institution, Approved by AICTE - New Delhi, Affiliated to Anna University - Chennai

PONNUSAMY NAGAR, SALEM ROAD(NH-44), NAMAKKAL - 637003. TAMILNADU.
Mobile: 9942099122, 9942099109, Web: www.selvamtech.edu.in

Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	MIXTURE AND ALLIGATION	Last updated on	24 January 2024

13) 80 Litres of a mixture contains milk and water in the ratio of 27 : 5. How much more water is to be added to get a mixture containing milk and water in the ratio of 3 : 1?

   a) 20 L.
   b) 10 L.
   c) 12 L.
   d) 15 L.

ANS: b) 10 L.

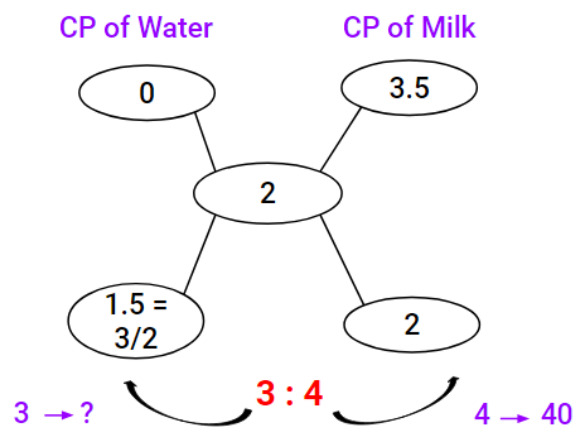Explanation:

Selvam College of Technology

Accredited by NAAC with "A" Grade, UGC Recognized 2(f) Status,
An ISO 9001:2015 Certified Institution, Approved by AICTE - New Delhi, Affiliated to Anna University - Chennai

PONNUSAMY NAGAR, SALEM ROAD(NH-44), NAMAKKAL - 637003. TAMILNADU.
Mobile: 9942099122, 9942099109, Web: www.selvamtech.edu.in

Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	MIXTURE AND ALLIGATION	Last updated on	24 January 2024

14) How much water must be added to a bucket which contains 40 litres of milk at the cost price of Rs. 3.50 per litre so that the cost of milk reduces to Rs. 2 per litre ?

   a) 25 litres
   b) 28 litres
   c) 30 litres
   d) 35 litres

ANS: c) 30 litres.

Explanation:

4 UNITS = 40 litres.

3 UNITS = 30 litres.

Accredited by NAAC with "A" Grade, UGC Recognized 2(f) Status,
An ISO 9001:2015 Certified Institution, Approved by AICTE - New Delhi, Affiliated to Anna University - Chennai
PONNUSAMY NAGAR, SALEM ROAD(NH-44), NAMAKKAL - 637003. TAMILNADU.
Mobile: 9942099122, 9942099109, Web: www.selvamtech.edu.in

Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	MIXTURE AND ALLIGATION	Last updated on	24 January 2024

15) 3 kg of tea costs Rs.25 per kg mixed with 2 kg of tea costs Rs.40 per kg. The average price per kg of the mixed tea is :

a) Rs. 31.
b) Rs. 32.
c) Rs. 33.
d) Rs. 35.

ANS: a) Rs. 31.

Explanation:
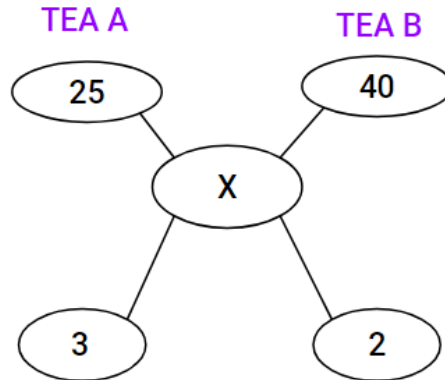
Average price / kg = $25 + \frac{2}{5}(15)$

= 31 kg.

CONCEPT 5 – RATIO OF QUANTITIES IN NEWLY FORMED MIXTURE

16)In two alloys A and B, the ratio of zinc to tin is 5 : 2 and 3 : 4 respectively. 7kg of the alloy A and 21 kg of the alloy B are mixed together to form a new alloy. What will be the ratio of zinc and tin in the new alloy?

  a) 3 : 1

  b) 3 : 2

  c) 1 : 1

  d) 2 : 1

ANS: c) 1:1.

Explanation:

- In 7 kg of alloy A, Zinc = 5 kg, Tin = 2 kg

- In 21 kg of alloy B,

$$Zinc = \frac{21 \times 3}{7} = 9 \text{ kg} \qquad Tin = \frac{21 \times 4}{7} = 12 \text{ kg}$$

Therefore, Required ratio = (5 + 9) : (2 + 12) = 14 : 14 = 1 : 1

Selvam College of Technology

Accredited by NAAC with "A" Grade, UGC Recognized 2(f) Status,
An ISO 9001:2015 Certified Institution, Approved by AICTE - New Delhi, Affiliated to Anna University - Chennai
PONNUSAMY NAGAR, SALEM ROAD(NH-44), NAMAKKAL - 637003. TAMILNADU.
Mobile: 9942099122, 9942099109, Web: www.selvamtech.edu.in

Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	MIXTURE AND ALLIGATION	Last updated on	24 January 2024

17) 60 kg of an alloy A is mixed with 100 kg of alloy B. If alloy A has lead and tin in the ratio 3 : 2 and alloy B has tin and copper in the ratio 1 : 4, the amount of tin in the new alloy is

    a) 44 kg.

    b) 50 kg.

    c) 80 kg.

    d) 27 kg.

ANS: a) 44 kg.

Explanation:

- Quantity of Tin in 60 kg of A = 60 * (2/5) = 24.
- Quantity of Tin in 100 kg of A = 100 * (1/5) = 20.
- Quantity of Tin in New Alloy = 24 + 20 = 44.

18) A and B are two alloys of gold and copper prepared by mixing metals in the ratio 5 : 3 and 5 : 11 respectively. Equal quantities of these alloys are melted to form a third alloy C. The ratio of gold and copper in the alloy 'C ' is?

    a) 17:15.

    b) 15:17.

    c) 12:11.

    d) 11:12.

ANS: b) 15:17.

Explanation:

Total quantities of Alloy A = 8 ; Total quantities of Alloy B = 16.

Equal quantities are melted, therefore we need to make the total same.

```
         Gold  :  Copper
Alloy A —  5*2  :   3*2
           10   :    6
Alloy B —   5   :   11
```

Hence the ratio is (10 + 5) : (11 + 6) = 15 : 17.

CONCEPT 6 – REPEATED DILUTION

19) From a vessel containing 100 litres of wine, 10 litres are drawn out and an equal amount of water is added. From the mixture, 10 litres is again drawn out and the same quantity of water is added. What is the final ratio of wine and water?

a) 81 : 19.
b) 19 : 81.
c) 11 : 81.
d) 81 : 11.

ANS: a) 81 : 19.

Explanation:

Remaining liquid = $X \left[1 - \dfrac{y}{x}\right]^n$ where, x — Original quantity.

y — Replaced quantity.

n — Number of times.

Remaining liquid = $100 \left[1 - \dfrac{10}{100}\right]^2$

= $100 \left[\dfrac{9}{10}\right]^2$

= 81.

Liquid : Water = 81 : 19.

![Selvam College of Technology Logo]

Selvam College of Technology

Accredited by NAAC with "A" Grade, UGC Recognized 2(f) Status,
An ISO 9001:2015 Certified Institution, Approved by AICTE - New Delhi, Affiliated to Anna University - Chennai

PONNUSAMY NAGAR, SALEM ROAD(NH-44), NAMAKKAL - 637003. TAMILNADU.
Mobile: 9942099122, 9942099109, Web: www.selvamtech.edu.in

Name of the Bundle	PROFICIENT BUNDLE V2	Subject	APTITUDE
Topic	MIXTURE AND ALLIGATION	Last updated on	24 January 2024

20) A vessel contains 20 litres of acid. 4 litres of Acid is taken out of the vessel and replaced by the same quantity of water. Next 4 liters of mixture are withdrawn and again the vessel is filled with the same quantity of water. The ratio of the quantity of acid left in the vessel with the quantity of acid initially in the vessel is,

   a) 25 : 16.
   b) 16 : 25.
   c) 4 : 5.
   d) 5 : 4.

ANS: b) 16 : 25.

Explanation:

Remaining liquid = $20 \left[1 - \frac{4}{20} \right]^2$

$= 20 \left[\frac{4}{5} \right]^2$

$= \frac{64}{5}$.

Final Liquid : Initial Liquid = $\frac{64}{5} : 20$ = 16 : 25.