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Sahi Prep Hai Toh Life Set Hai

MIXTURE & ALLIGATION

Part-2

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Agenda

Application of Alligation

14-15 Questions

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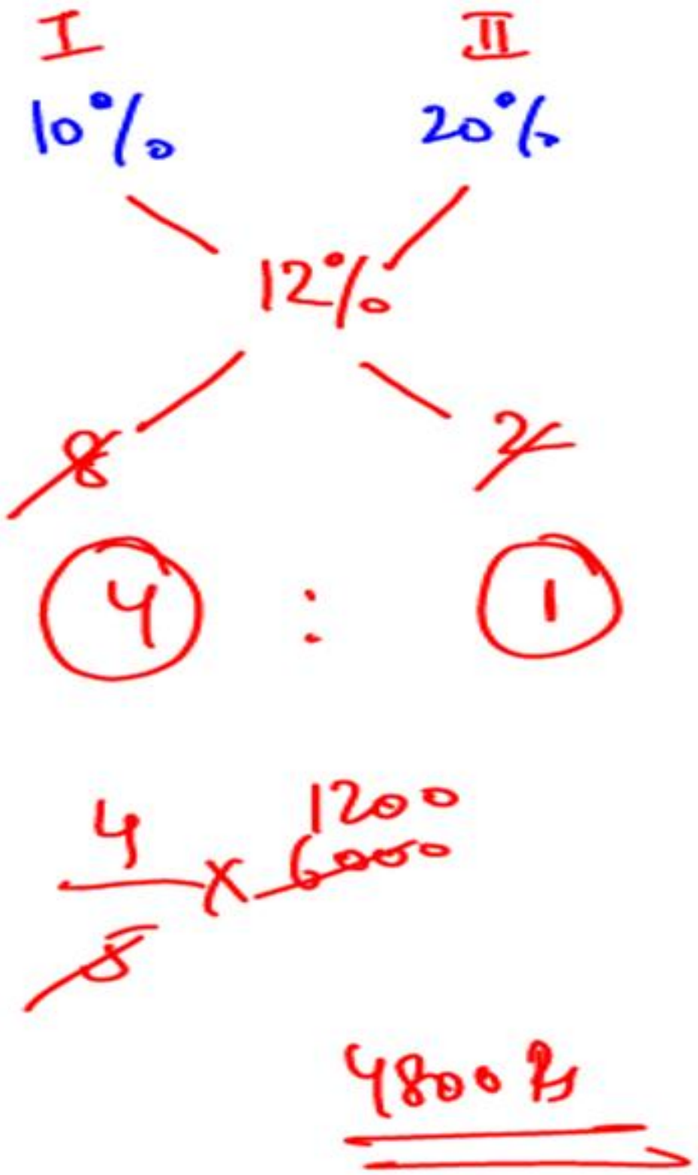

Q. Some amount out of Rs.6000 was lent out at 10% per annum and the rest amount at 20% per annum and thus in 5 years the total interest from both the amount collected was Rs.3600. What is the amount which was lent out at 10% per annum?

(a) 4500 (b) 4800

(c) 5200 (d) 3600

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Ans. (b)

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255 km 7 hrs

Bus @ 30 km/h 4 hrs

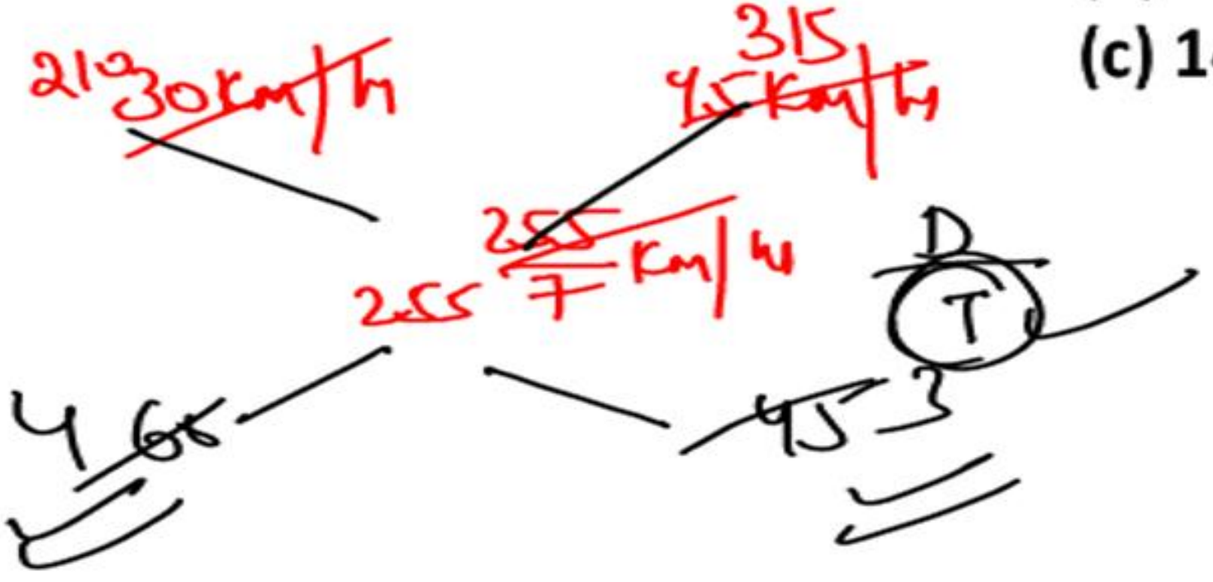
Train @ 45 km/h 3 hrs

Q. A person travels 255 km in 7 hours in two stages. In the first part of journey, he travels by bus at the speed of 30 km/hour. In the second part of journey, he travels by train at the speed of 45 km/hour. How much distance did he travel by bus?

(a) 120 km (b) 135 km

(c) 145 km (d) 125 km

I Allgation



30 × 4

= 120 km

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255 km 7 hrs Bus Train D_{Bus} ??

30 km/h 45 km/h

II nd equation approach

$$\frac{D}{30} + \frac{255-D}{45} = 7$$

$$\frac{3D + 510 - 2D}{90} = 7$$

$$D = 120 \text{ km}$$

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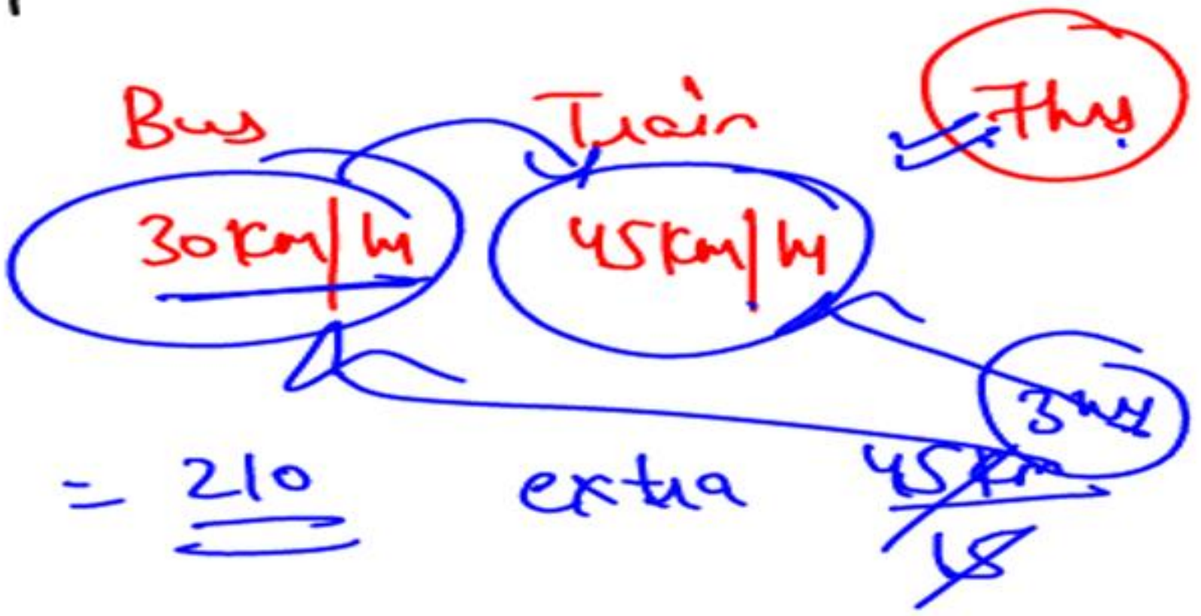
Ans. (a)

IIIrd

Logical Approach

255 km



30 × 7 = 210 extra

4 × 30 = 120 km

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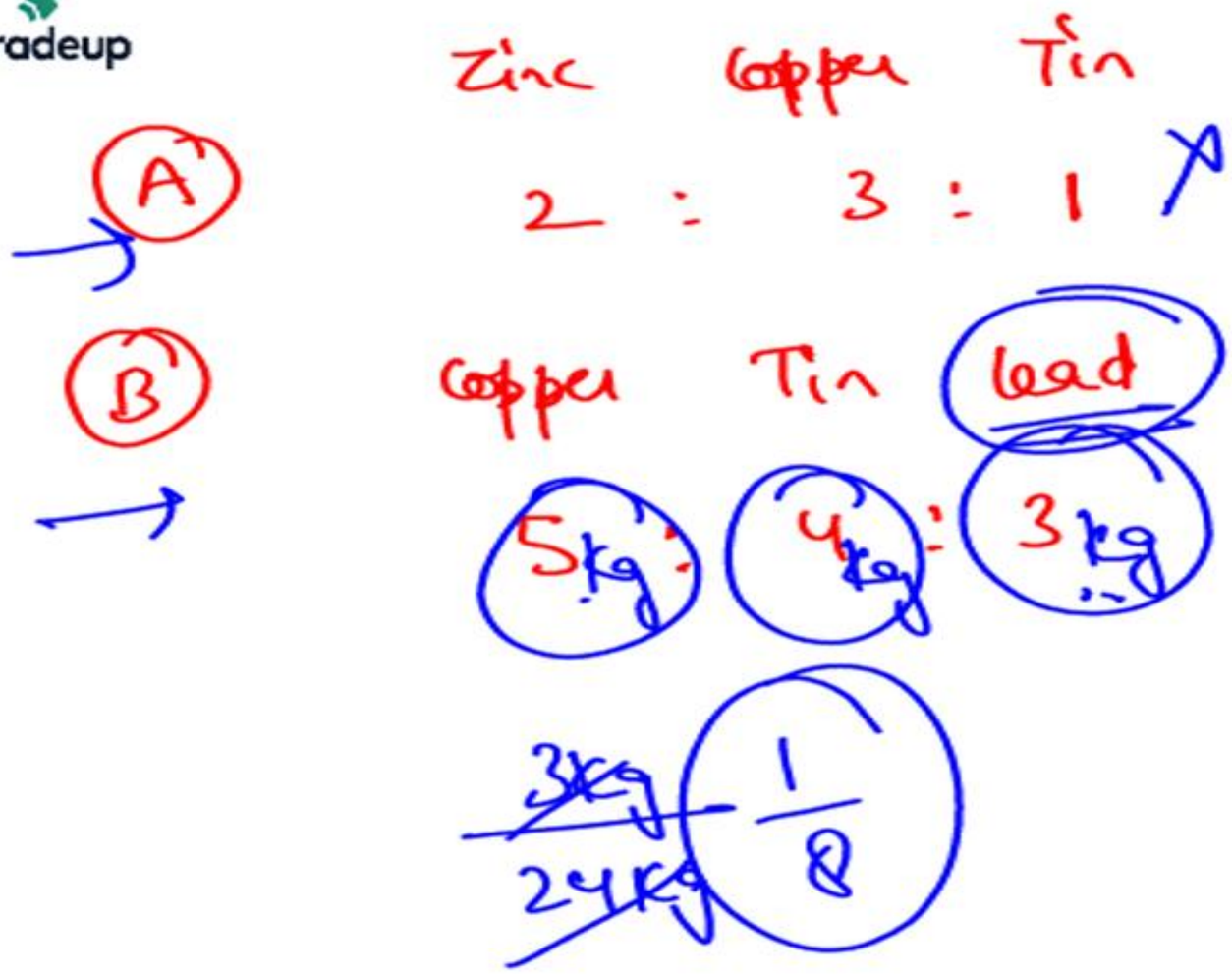

Q. An alloy contains zinc, copper and tin in the ratio 2 : 3 : 1 and another contains copper, tin and lead in the ratio 5 : 4 : 3. If equal weights or both alloys are melted together to form a third alloy, then the weight of lead per kg in the new alloy will be

(a) 1/2 Kg. (b) 1/8 Kg.

(c) 3/14 Kg. (d) 7/9 Kg.

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Eg

Copper	Tin	Lead
39	71	117

Tin	Lead	Zinc
134	219	513

866

Equal qts of A & B are taken find weight of zinc / kg of that alloy

$$\frac{513}{1732}$$

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Ans. (b)

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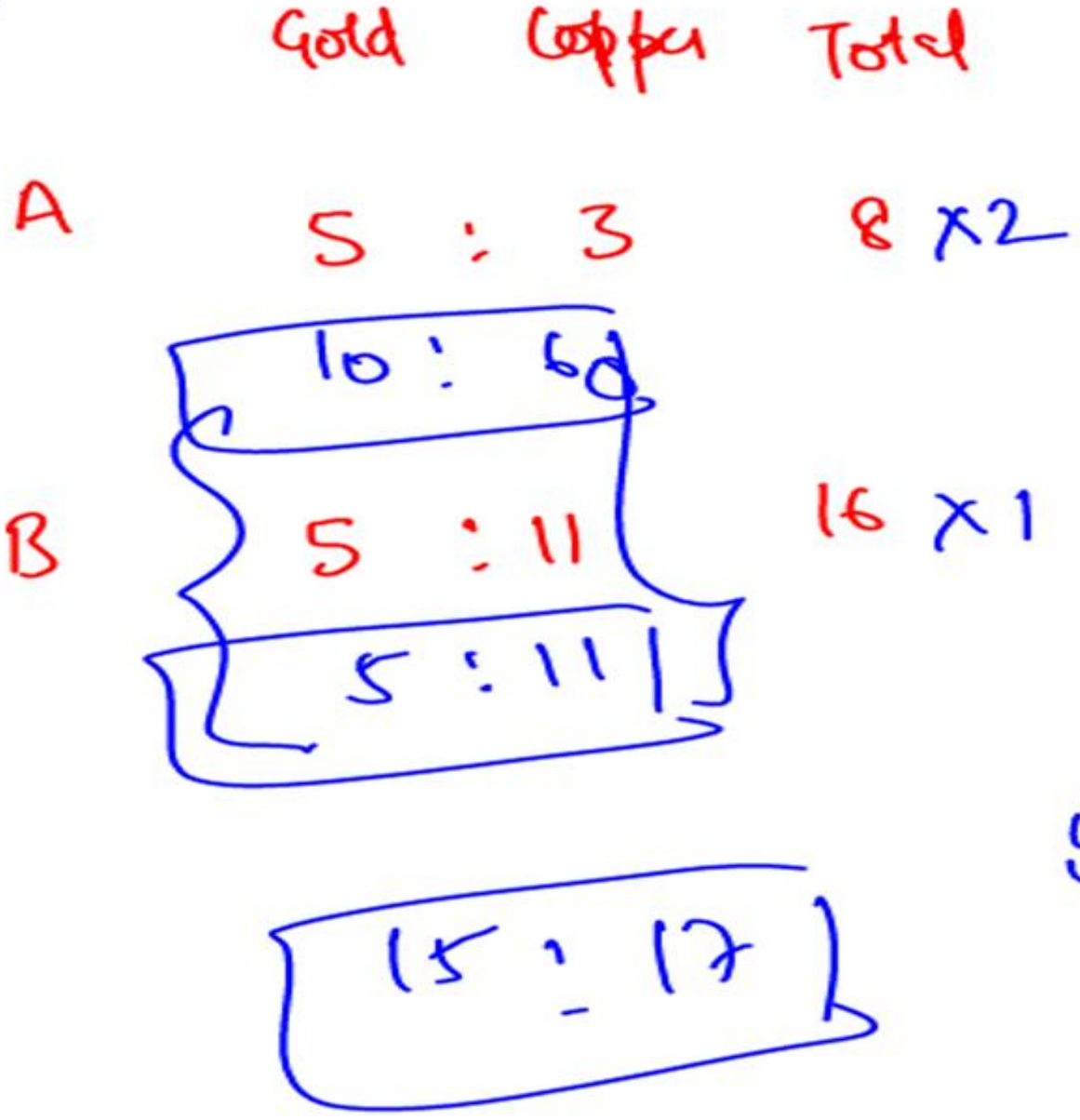

Q. A and B are two alloys of gold and copper prepared by mixing metal in the ratio 5 : 3 and 5 : 11 respectively. Equal quantities of these alloys are melted to form a third alloy C. The ratio of gold and copper in the alloy C is

(a) 25 : 33
(b) 33 : 25
(c) 15 : 17
(d) 17 : 15

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Ans. (c)

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Sulphuric Water

I 3 : 2 5×6

18 : 12

II 7 : 3 10×3

21 : 9

III 11 : 4 15×2

22 : 8

61 : 29

Q. There are three containers of equal capacity. The ratio of sulphuric acid to water in the first container is 3:2, that in the second container is 7:3 and in the third container it is 11:4. If all the liquids are mixed together then the ratio of sulphuric acid to water in the mixture will be.

(a) 61:29 (b) 61:28

(c) 60:29 (d) 59:29

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Ans. (a)

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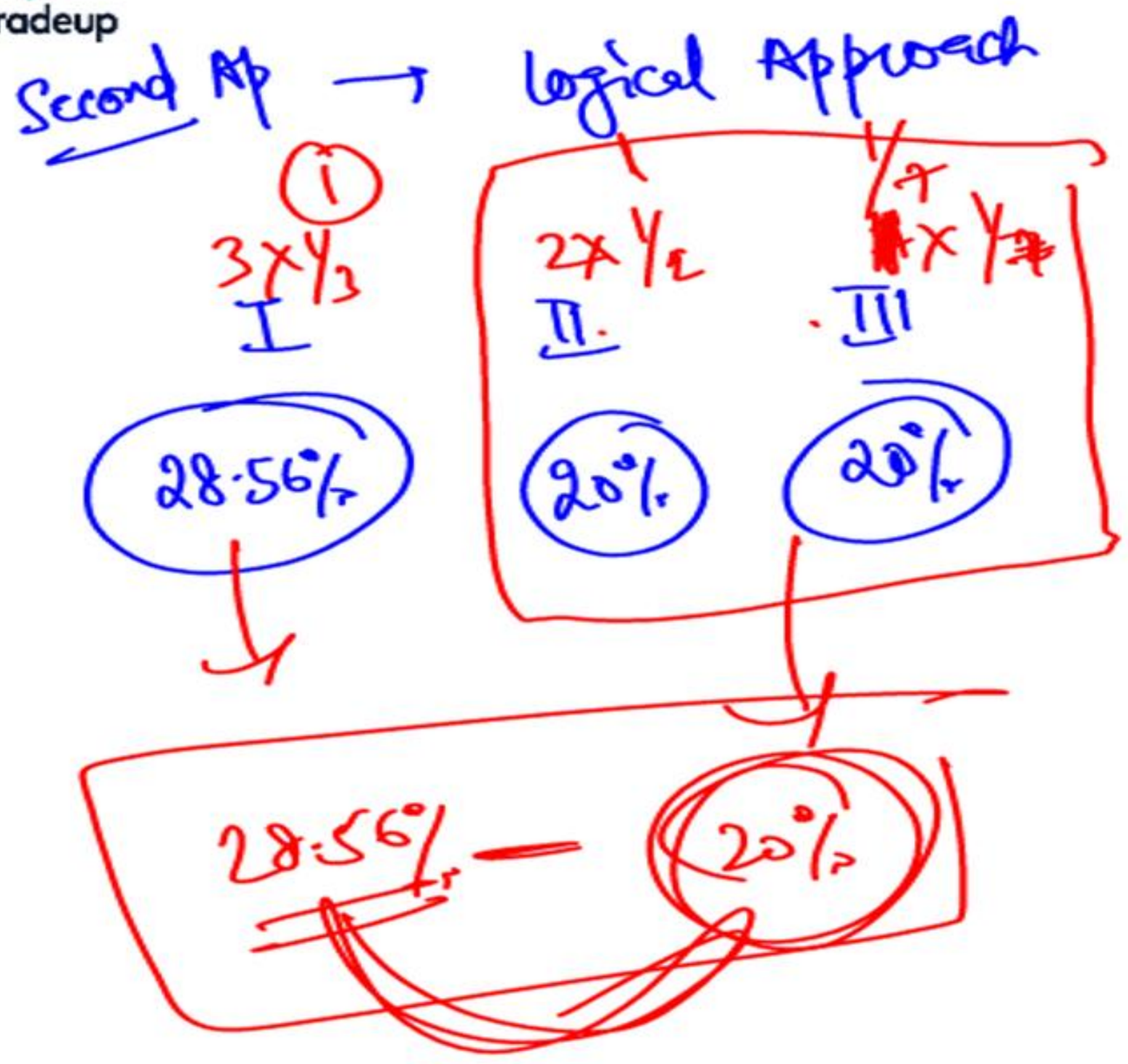

Q. Three vessels whose capacities are in the ratio of 3:2:1 are completely filled with milk mixed with water. The ratio of milk and water in the mixture of vessels are 5:2, 4:1 and 4:1 respectively. Taking 1/3 of first, 1/2 of second and 1/7 of third mixtures, a new mixture kept in a new vessel in prepared. The percentage of water in the new mixture is.

(a) 32
(b) 28
(c) 30
(d) 24

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Capacities 3 : 2 : 1

I II III

M : W = 5 : 2 | M : W = 4 : 1 | M : W = 4 : 1

1/3 | 1/2 | 1/7

Fast App

M : W

5 : 2

25 : 10

4 : 1

28 : 7

4 : 1

4 : 1

M W

5 7

19 : 6 18

6 × 4/25

24%

7 × 5 × 3 × 1/3

5 × 7 × 2 × 1/2

5 × 7 × 1 × 1/7

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Ans. (d)

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A

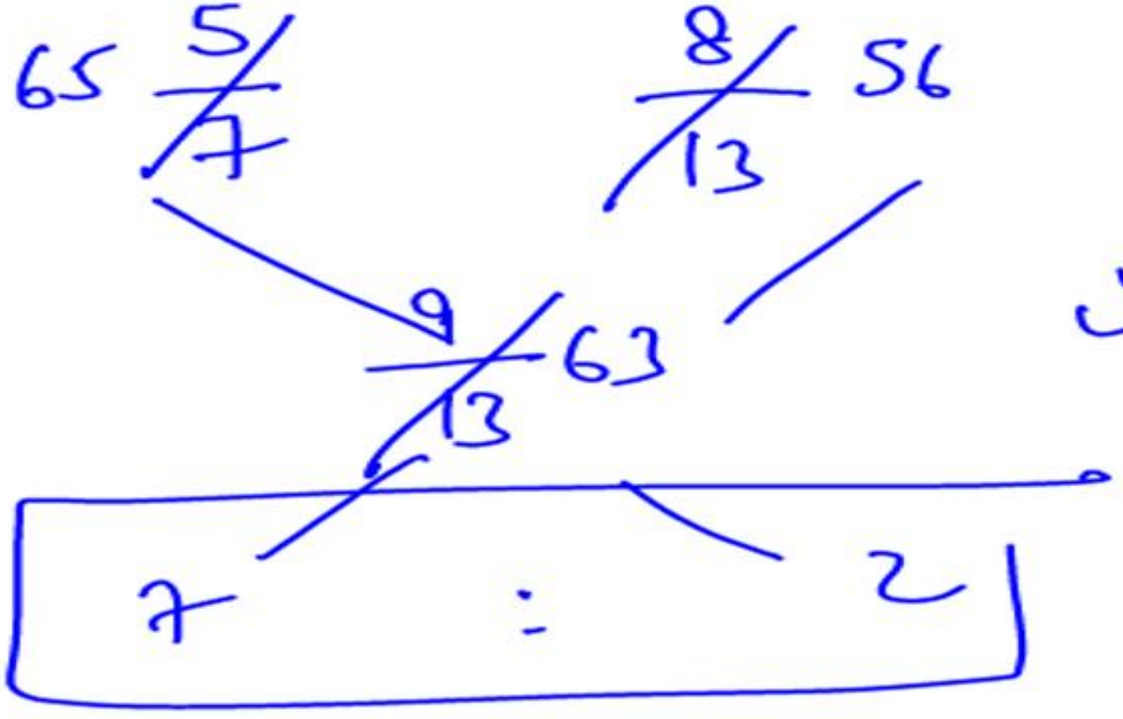
Acid : water

5 : 2

B

Acid : water

8 : 5



Q. Acid and water are mixed in a vessel A in the ratio of 5 : 2 and in the vessel B in the ratio 8 : 5. In what proportion should quantities be taken out from the two vessels so as to form a mixture in which the acid and water will be in the ratio of 9 : 4?

(a) 7 : 2
(b) 2 : 7
(c) 7 : 4
(d) 2 : 3

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Ans. (a)

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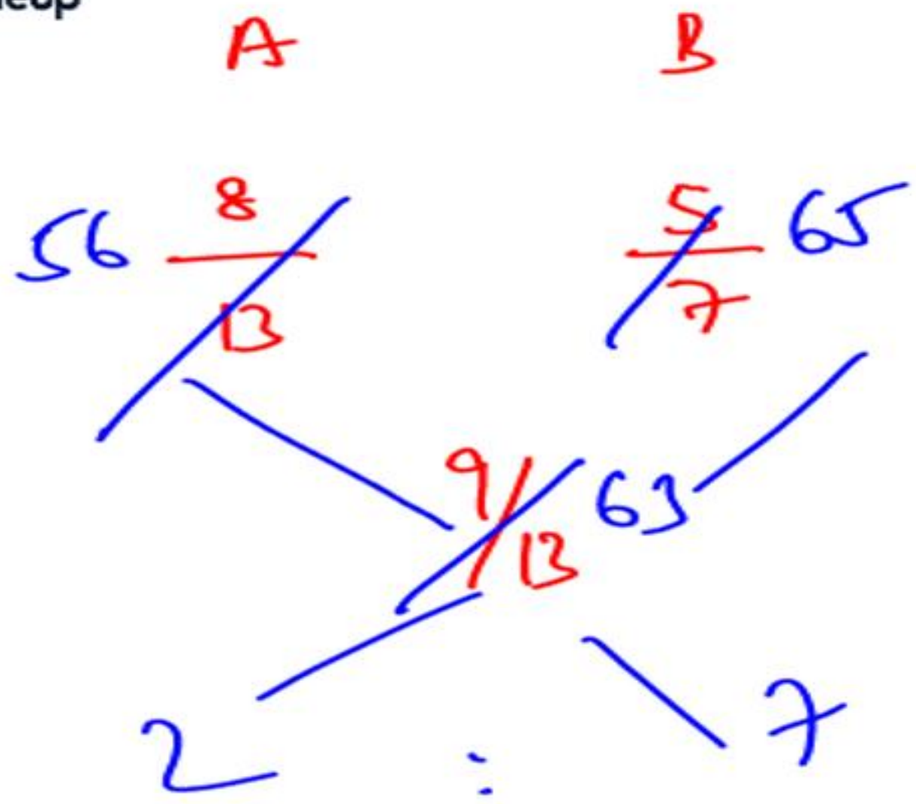

Q. Two vessels A and B contain milk and water mixed in the ratio 8 : 5 and 5 : 2 respectively. The ratio in which these two mixtures be mixed to get a new mixture containing $69\frac{3}{13}\%$ milk is

(a) 3 : 5
(b) 5 : 2
(c) 5 : 7
(d) 2 : 7

$$\frac{69\frac{3}{13}}{100} \Rightarrow \frac{900}{1300}$$

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Ans. (d)

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Eg. Correct = +4 Wrong = −1

100 Questions Marks → 290 Attempted → All

How many questions he marked wrong?

I^st Linear eq^n in 2 variables

Let correct → x wrong → y

$x + y = 100$

$4x - y = 290$

$x = 78$ $y = 22$

II^nd Linear eq^n in 1 variable

Let wrong → x

Correct → 100 − x Wrong → x

$4(100 - x) - 1 \cdot x = 290$

$x = 221$

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II nd

Without Variables

Correct → +4

Wrong → -1

Question → 100

Score → 290

100 · 4 ⇒ 400

Goal → 110 → 22

8

Wrong

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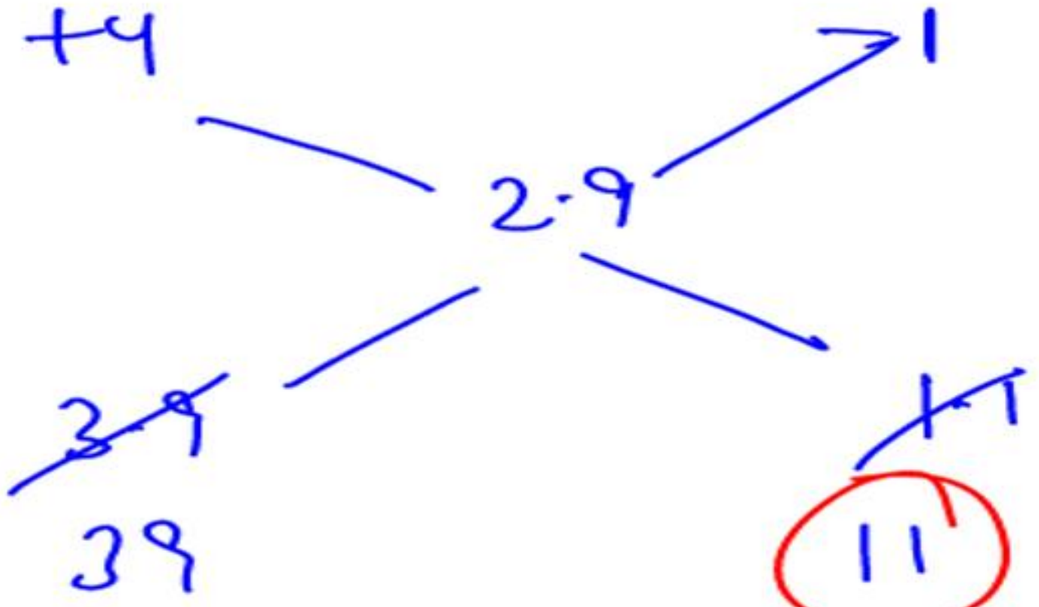
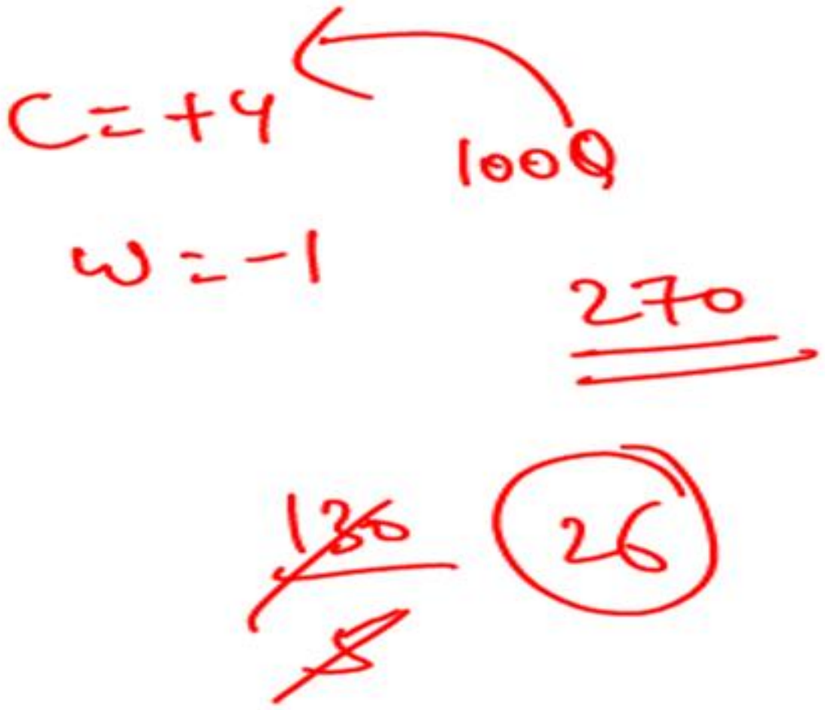
IVth Alligation (Bed Approach)

Correct Wrong

100 290



$\frac{11}{55} \times 100 = 220$ Ans



Q. In an objective exam of 100 questions, 4 marks are allotted for every correct answer and 1 mark is deducted for every wrong answer. After attempting all the 100 questions, a student got the total of 270 marks, Find the number of questions that he attempted wrong.

(a) 74 (b) 46

(c) 26 (d) None of these

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Ans. (c)

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2 legs — 4 legs

Pigeons — Rabbits

Heads → 300

Legs → 750

No. of Pigeons → ??

Legs → 300 × 2 = 600 legs

$\frac{150}{2}$ → 75 Rabbits

300 − 75 = 225

Q. In a zoo there are some pigeons and some rabbits. If their heads are counted these are 300 and if their legs are counted these are 750. Find the number of pigeons in the zoo.

(a) 215 **(b) 220**

(c) 225 **(d) 230**

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Ans. (c)

	Pigeons	Rabbits
Heads →	245	
Legs →	640	
Rabbits →	77	490

$\frac{150}{2} \Rightarrow 75$

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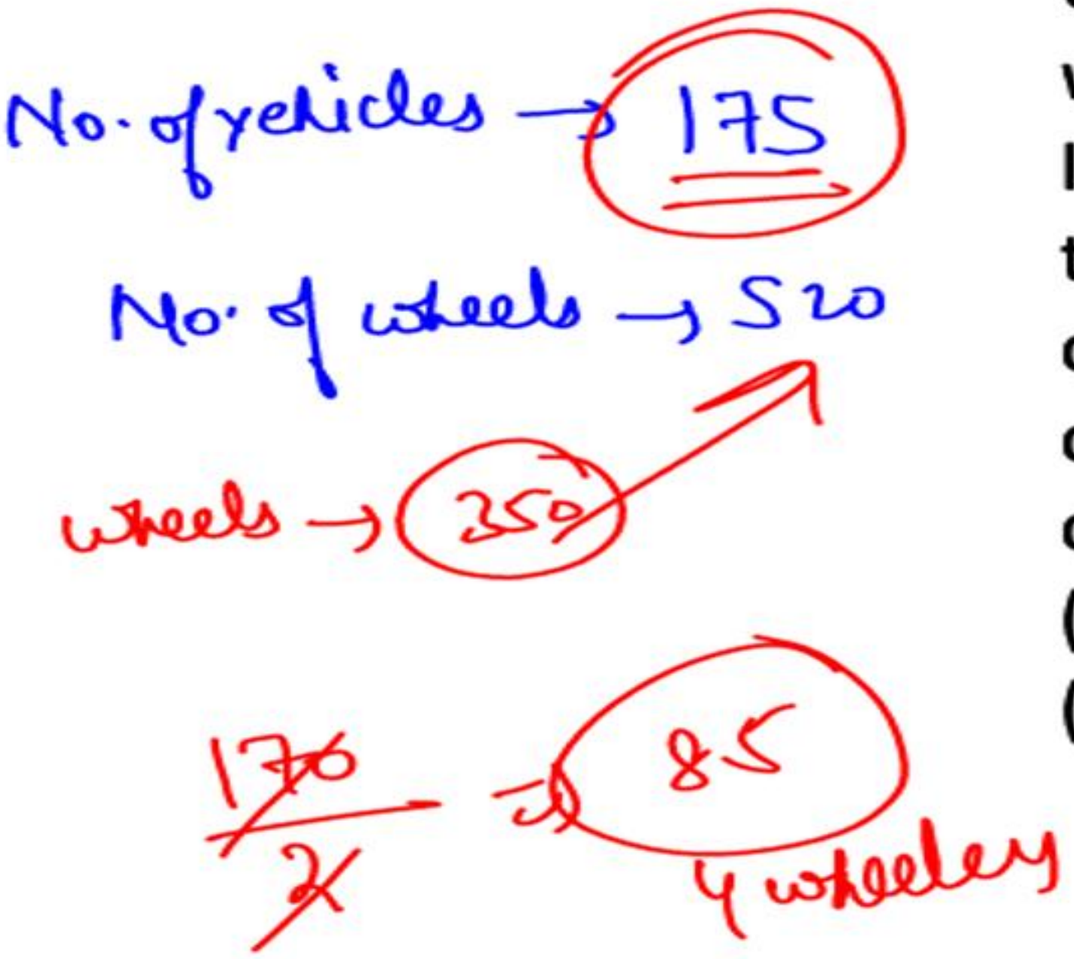

Q. In a parking there are some two wheelers & rest are four wheelers. If wheels are counted, there are total 520 wheels but the incharge of the parking told that there are only 175 vehicles. Find the number of two wheelers?

(a) 108 (b) 95

(c) 72 (d) 90

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Ans. (d)

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Eg.

A	B	C
Rs.20/pen	Rs.30/pen	Rs.50/pen
x	y	z

In what ratio I, should purchase 3 varieties of pen, so that my average price/pen is Rs.40?

Sol^N

$$\frac{20x + 30y + 50z}{x+y+z} = 40$$

$$20x + 30y + 50z = 40x + 40y + 40z$$

$$20x + 10y = 10z$$

$$\boxed{2x + y = z}$$

Can't be det

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eg

A	B	C
30 Rs/pen (x)	50 Rs/pen (y)	100 Rs/pen (z)

Average price = 60 Rs/pen

(i) 1 : 1 : 1

(ii) 2 : 1 : 2 ✗

(iii) 6 : 2 : 5

(iv) 2 : 6 : 3

(v) 3 : 4 : 5 ✗

(vi) 7 : 3 : 6

Shortcut

$30x + 10y = 40z$

$3x + y = 4z$

(i), (iii), (iv), (vi)

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Q. In what ratio must a person mix three kinds of wheat costing him Rs. 1.20, Rs. 1.44 and Rs. 1.74 per kg, so that the mixture may be worth Rs. 1.41 per kg?

(a) 12:7:7 (b) 7:12:17

(c) 12:11:5 (d) 5:8:7

x y z

120 144 174

Average → 141

$21x = 3y + 33z$

$7x = y + 11z$

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Ans. (a)