Mixtures and Alligation:

TCS / Other Placement & Competitive Exams

1 - 2

Concept

CP → 8 Rs/kg

15 Rs/kg → CP

x

y

x + y

CP

1 weight Any

Unit Same

Rational

$8x + 15y = 11(x+y)$

$8x + 15y = 11x + 11y$

$4y = 3x$

$\frac{x}{y} = \frac{4}{3}$

Concept

8 Rs/kg

15 Rs/kg

x

y

x+y

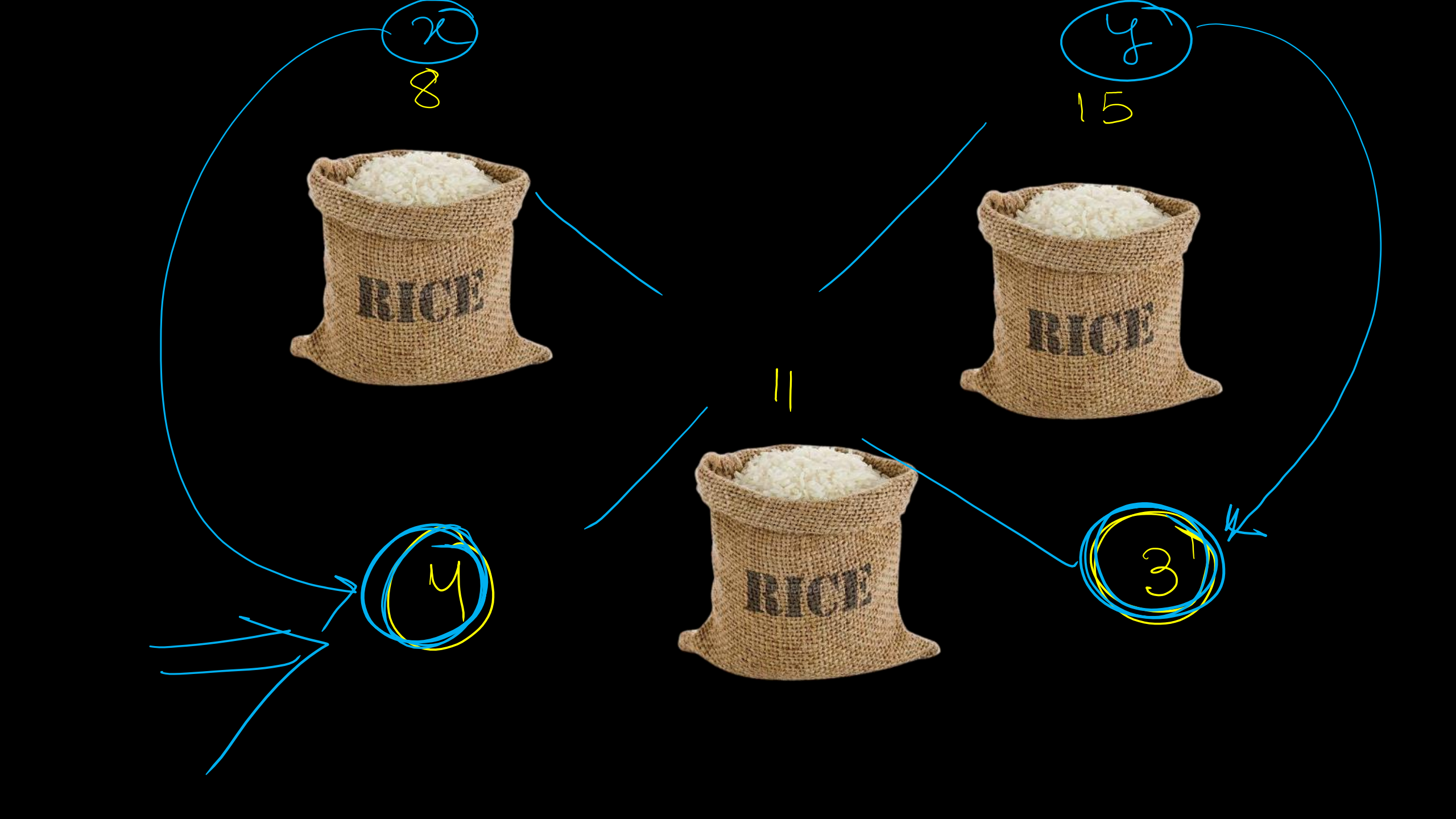
11 Rs/kg

$$8x + 15y = 11(x+y)$$

$$8x + 15y = 11x + 11y$$

$$4y = 3x$$

$$\frac{x}{y} = \frac{4}{3}$$


x
8
y
15
RICE
RICE
11
RICE
4
3

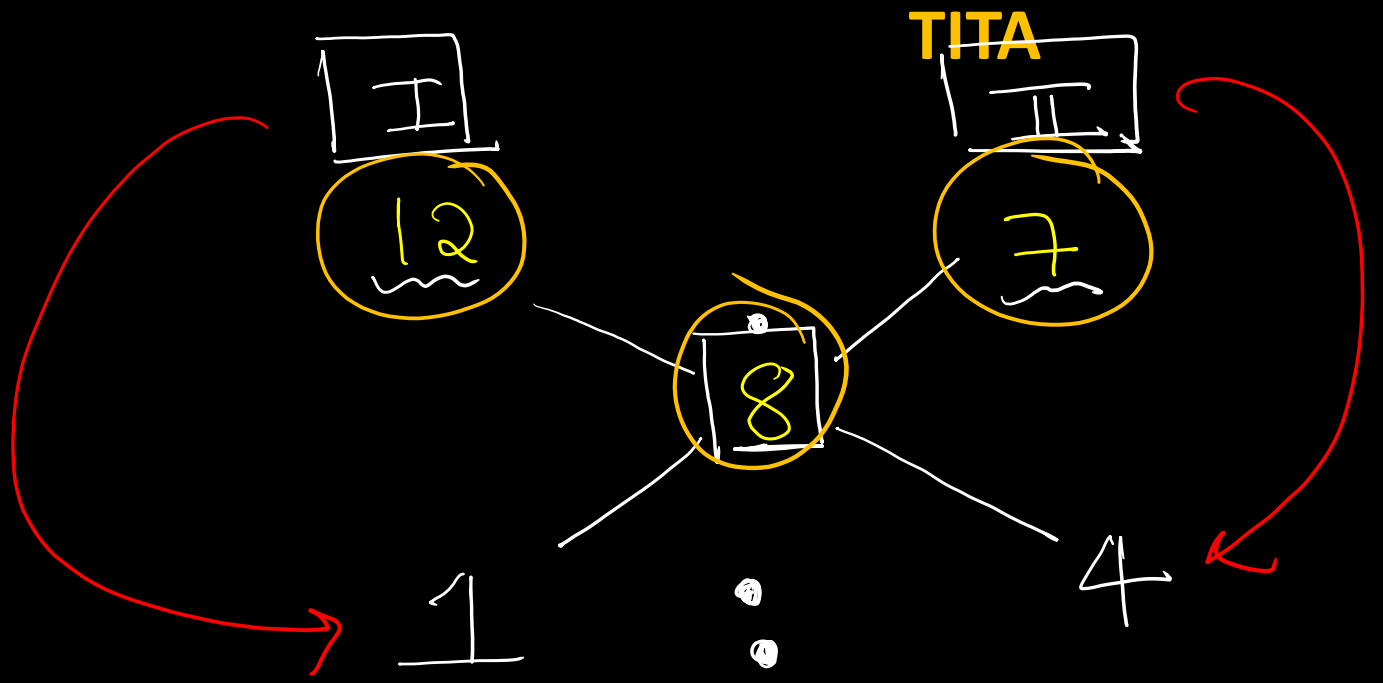
TYPE _ 1

Basic

Question1 :

In what proportion must a grocer mix rice at Rs.12 a kg and Rs.7 a kg so as to make a mixture worth Rs. 8 a kg?

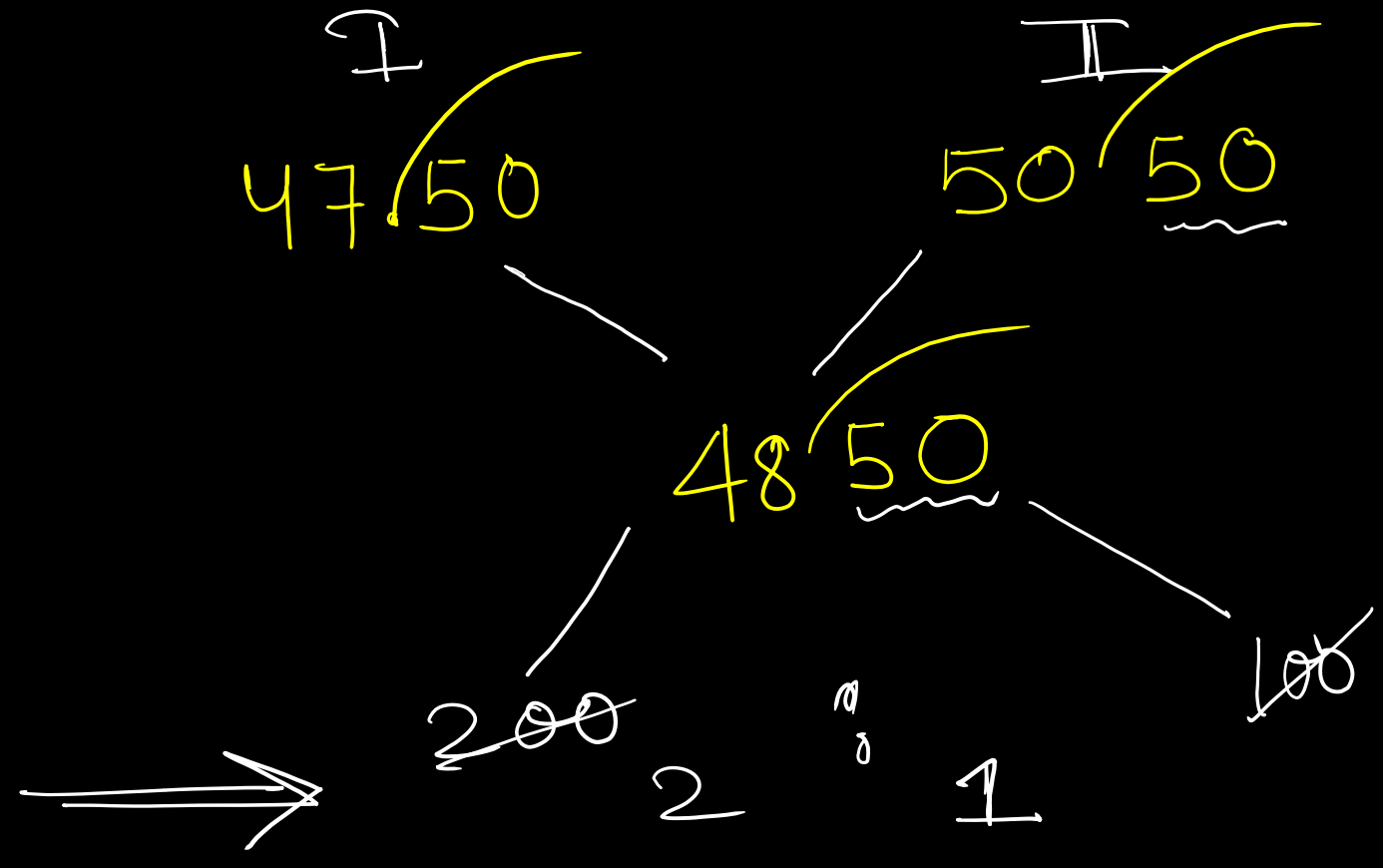
TITA



Question2:

In what proportion must tea at Rs 47.50 a kg be mixed with tea at Rs 50.50 per kg to produce a mixture worth Rs 48.50 per kg?

(A) 2:1 (B) 1:2 (C) 4:1 (D) 3:2



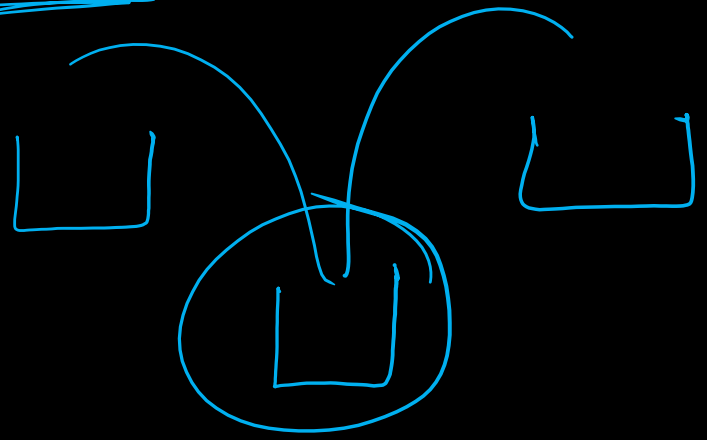
Q.3 The ratio in which two sugar solutions of the concentration 15% and 40% are to be mixed to get a solution of concentration 30% is:

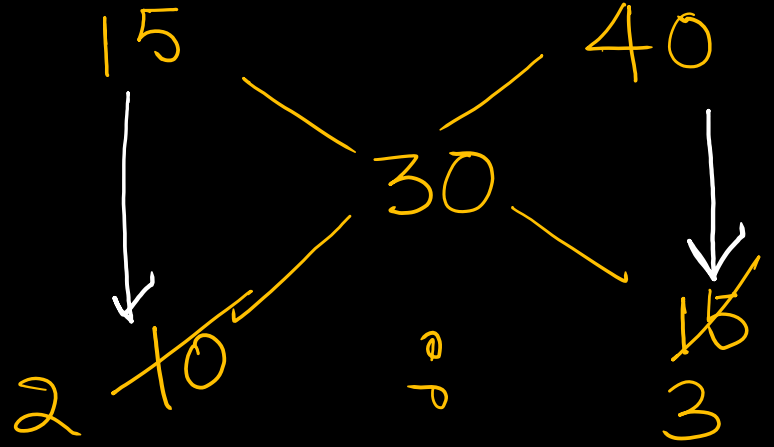
(A) 2:3

(B) 3:2

(C) 8:9

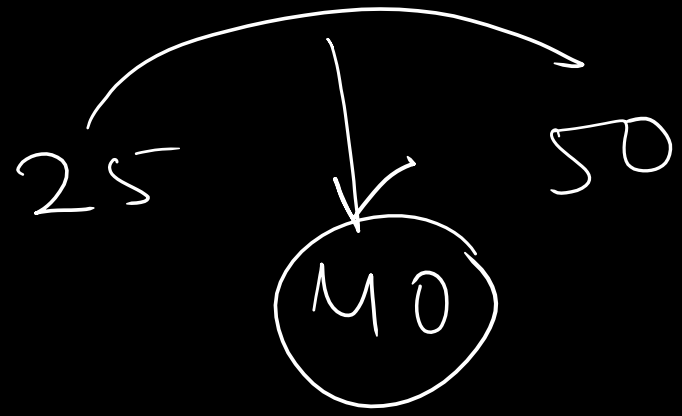
(D) 9:8





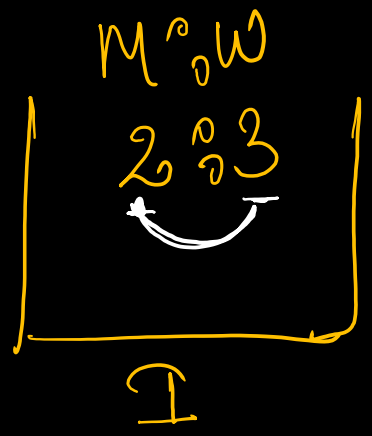
Q.4 In what ratio must 25% of alcohol be mixed with 50% of alcohol to get a mixture of 40% strength alcohol?

TITA



Imp:

Type -2



M
$\frac{2}{5}$

M
$\frac{3}{7}$

M
$\frac{5}{11}$

Question1 :

Two vessels A and B contain mixtures of milk and water. The ratio of milk and water in these two vessels is 5:2 and 8:5 respectively. In what ratio must these mixtures be mixed to form a new mixture containing milk and water in 9:4 ratios?

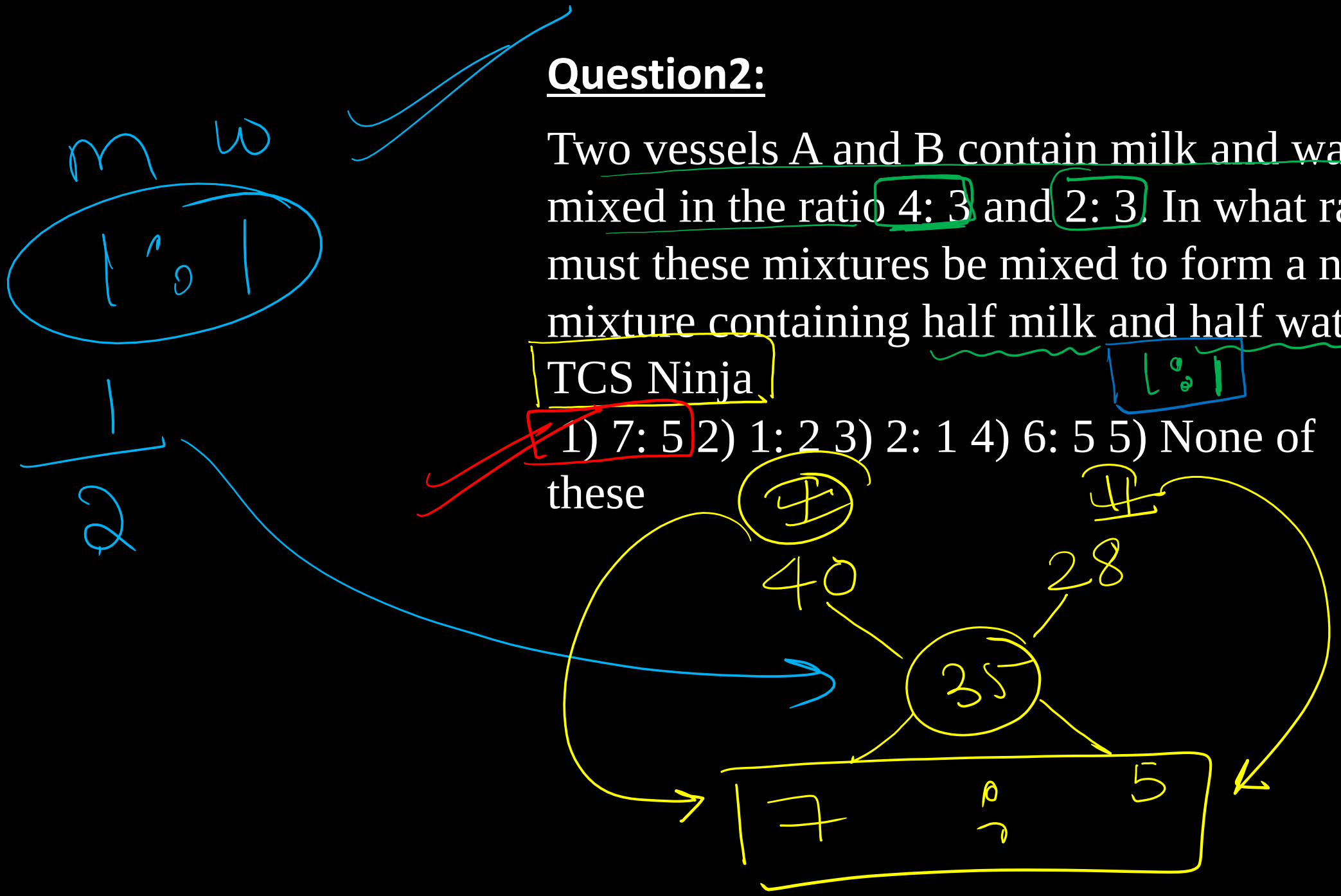
1) 7:2 2) 2:7 3) 3:5 4) 5:3 5) 7:9

Question2:

Two vessels A and B contain milk and water mixed in the ratio 4: 3 and 2: 3. In what ratio must these mixtures be mixed to form a new mixture containing half milk and half water?

TCS Ninja

1) 7: 5 2) 1: 2 3) 2: 1 4) 6: 5 5) None of these

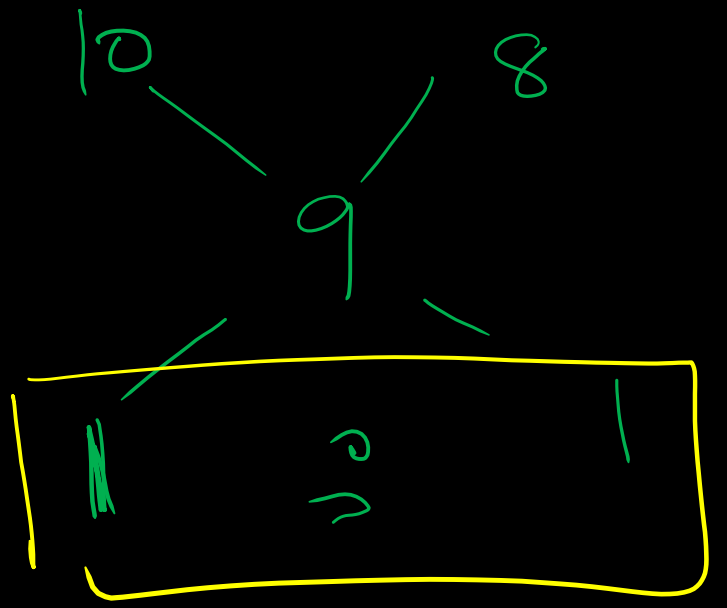


Question 3:

In what ratio should two different types of mixtures containing, milk and water in the ratio of 5:1 and 2:1 respectively mixed to obtain a final mixture containing milk and water in the ratio of 3:1?

1) 7:5 2) 1:2 3) 2:1 4) 1:1 5) None of these

Lcm = 12



Question4 :

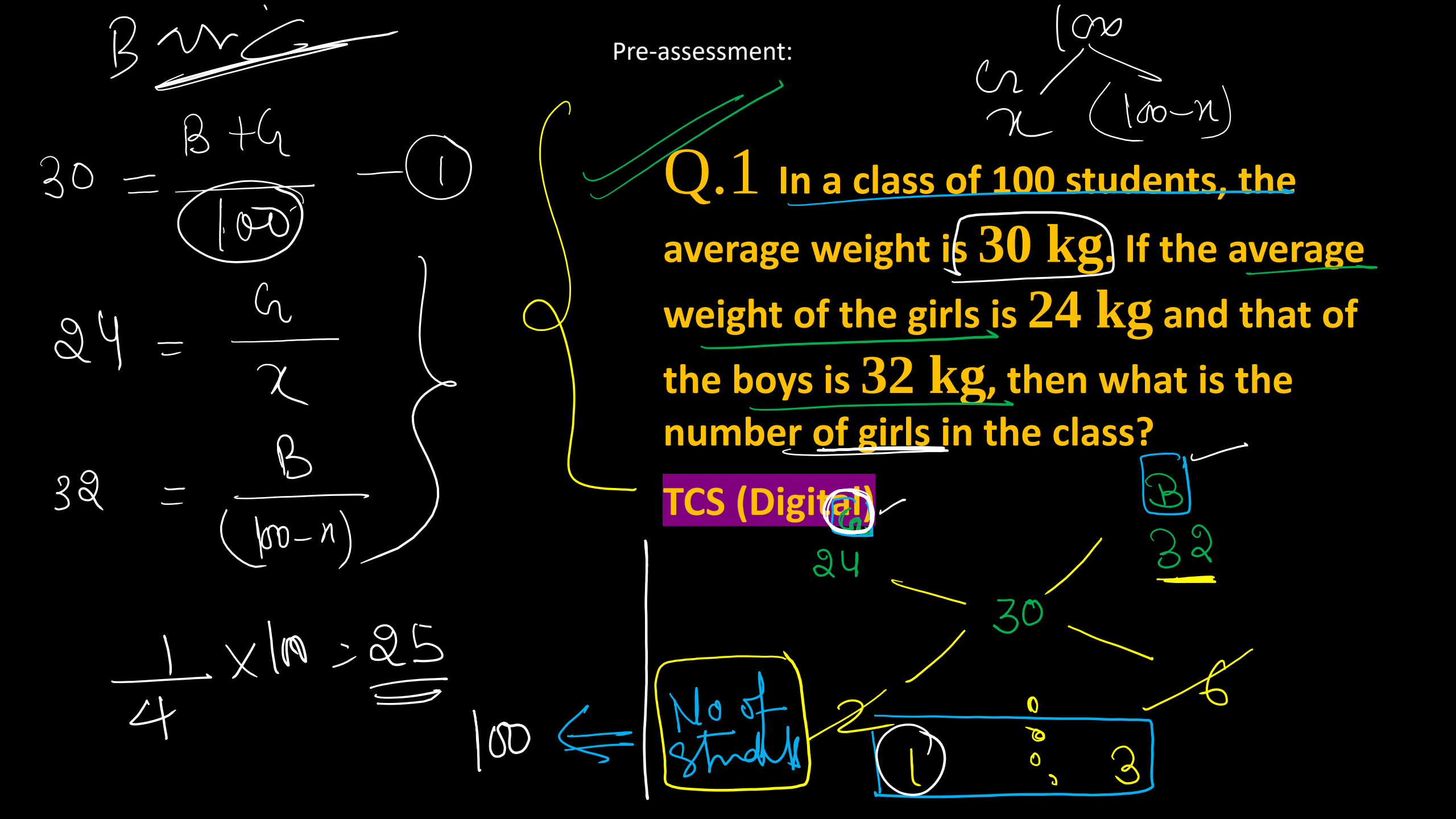
Two vessels A and B contain spirit and water mixed in the ratio 5:2 and 7:6 respectively. Find the ratio in which these mixture be mixed to obtain a new mixture in vessel c containing spirit and water in the ratio 8:5?

A. 1:7 B.2:9 C.7:9 D.3:8

Pre-assessment:

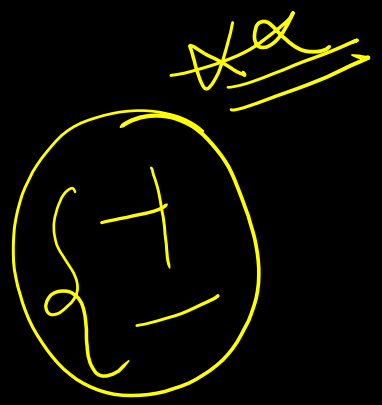
Q.1 In a class of 100 students, the average weight is 30 kg. If the average weight of the girls is 24 kg and that of the boys is 32 kg, then what is the number of girls in the class?

TCS (Digital)

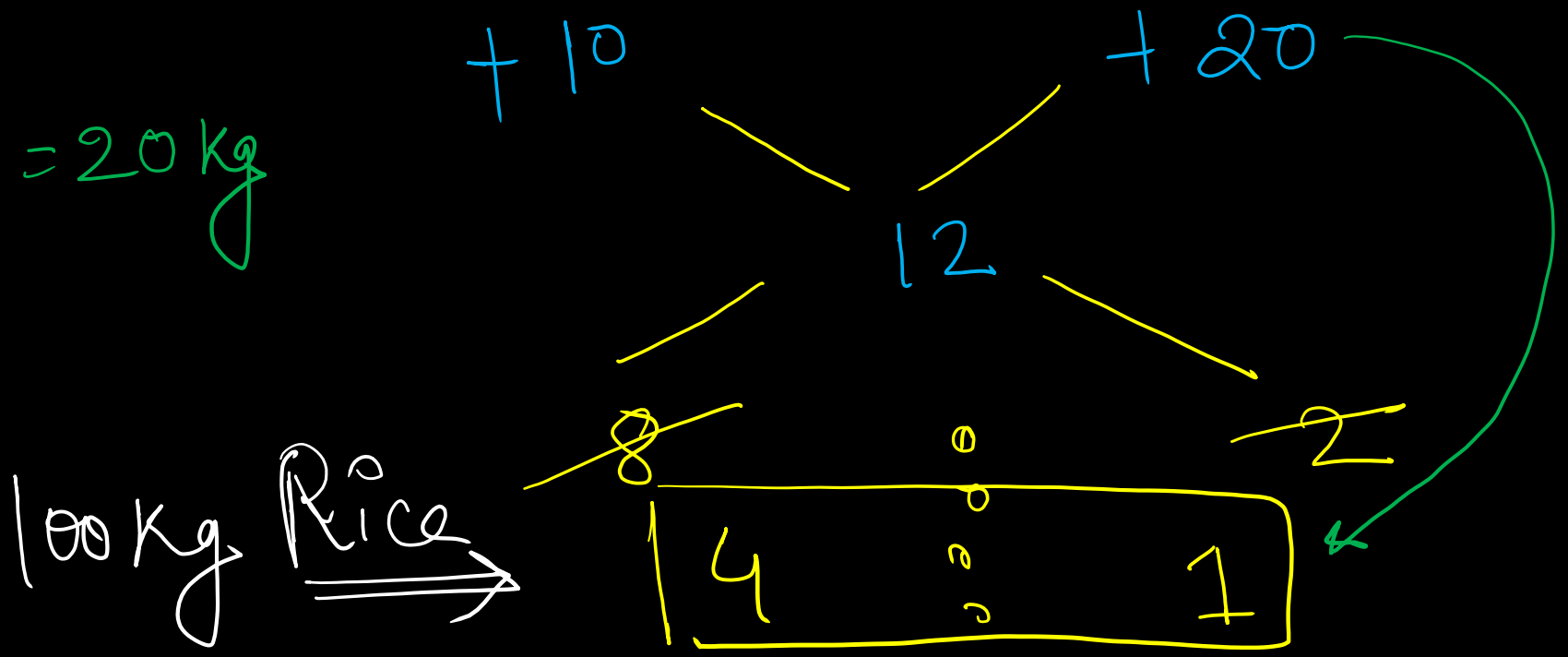


Question 5:

100kg rice partially sold at 10% profit. The remaining at 20% profit, if the total profit was 12% on this sale, how much rice did he sell at 20% profit??



$\frac{1}{5} \times 100 = 20\ kg$



Question6 :

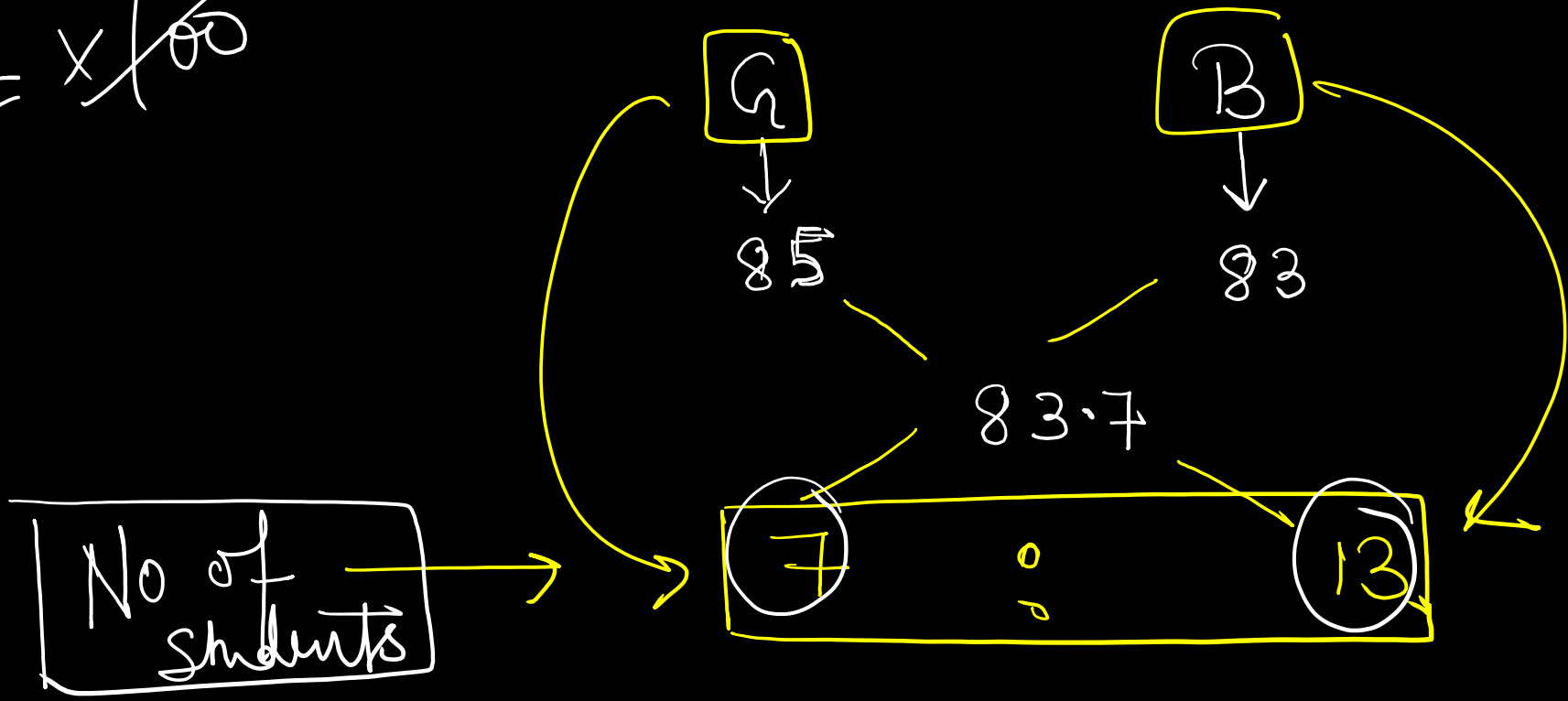
The average pass percentage of girls in class X examination in a school is 85% and that of boys is 83%. The average pass percentage of all boys and girls in class X of that school is 83.7%. Find the percentage of the number of girls in class X of that school.

$= 35\%$

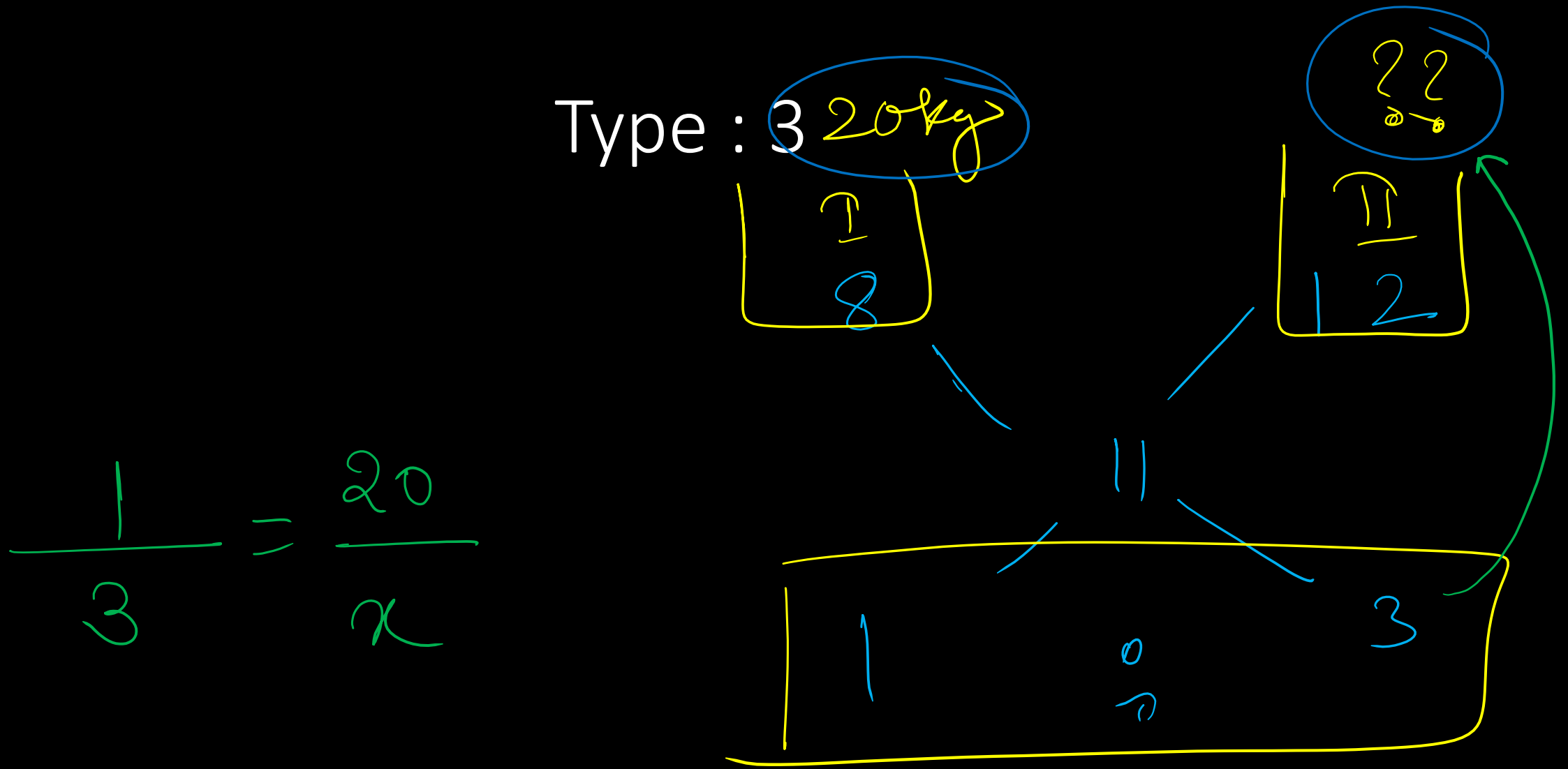
$\frac{7}{20} \times 100$

5

TITA



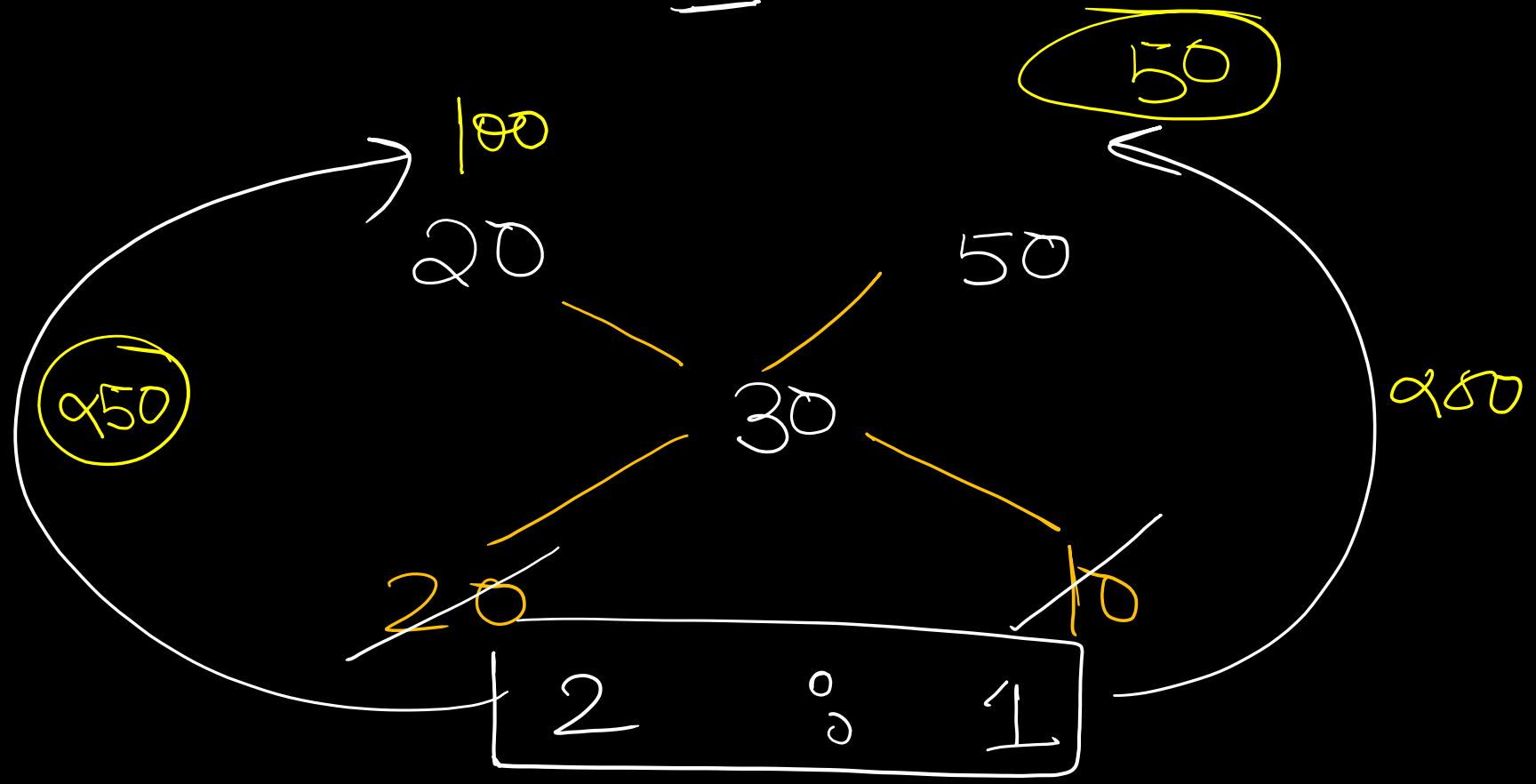
Type : 3



Question1 :

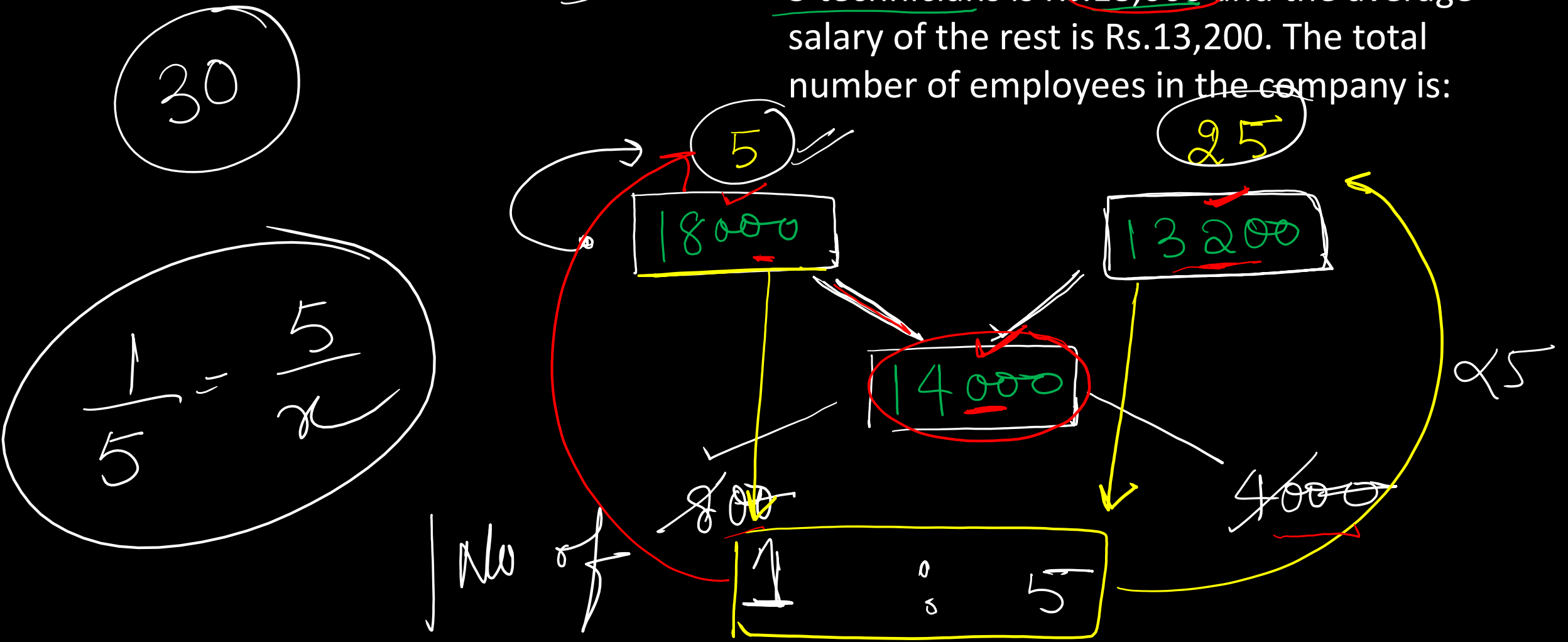
A 100 ml solution of H2SO4 having concentration of 20% is mixed with a 50% concentrated x ml mixture such that the net mixture is 30% concentrated. Determine x.

$$\frac{2}{1} = \frac{100}{x}$$

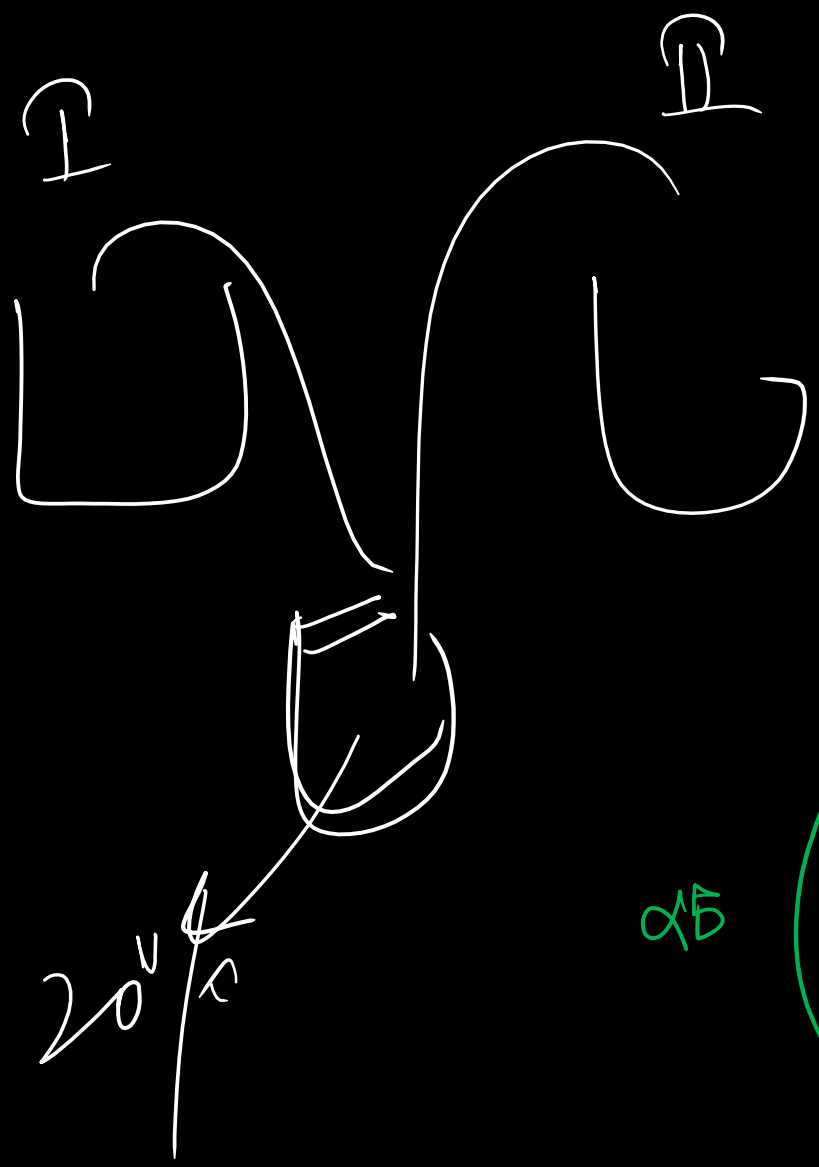


Question2 :

The average salary of all the employees in a company is Rs.14,000. The average salary of 5 technicians is Rs.18,000 and the average salary of the rest is Rs.13,200. The total number of employees in the company is:

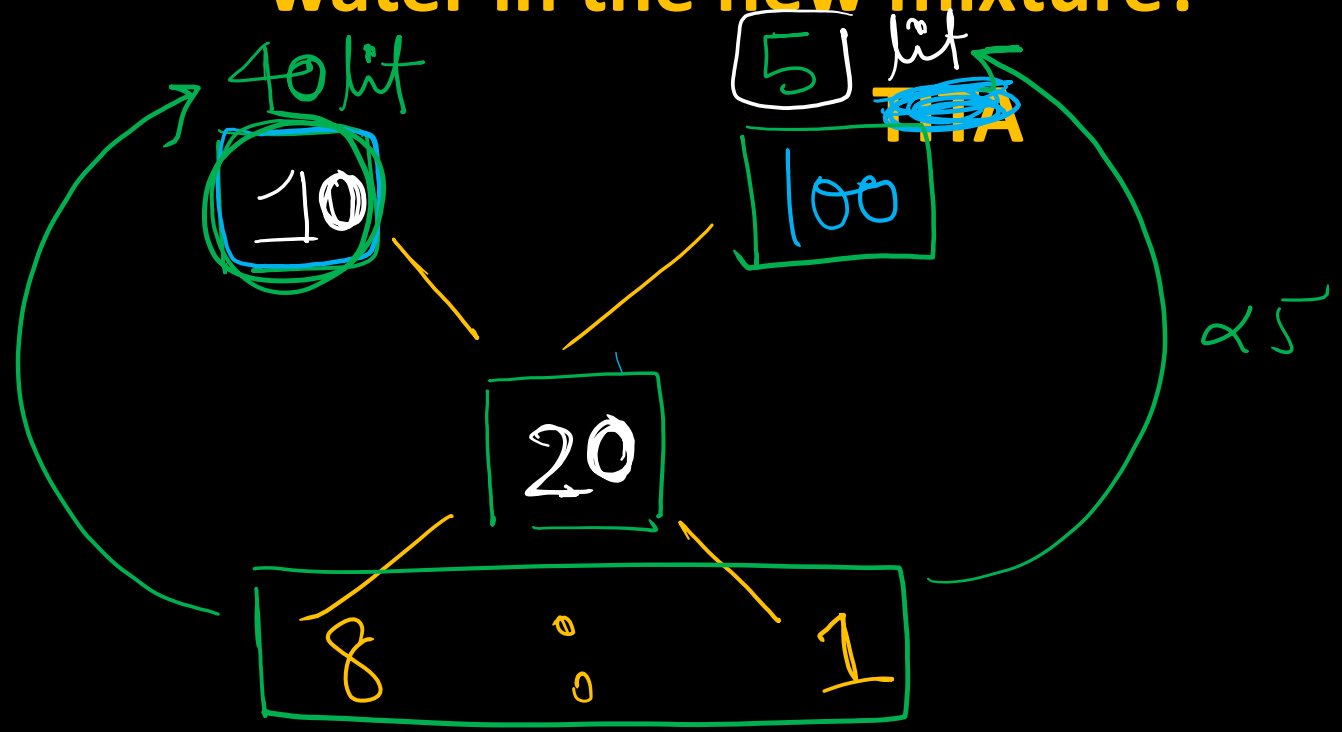


Type : 4



Question1 :

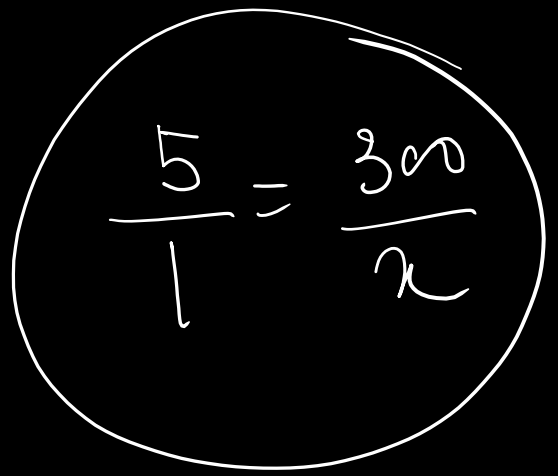
A mixture of 40 litres of milk and water contains 10% water. How much water must be added to take 20% water in the new mixture?

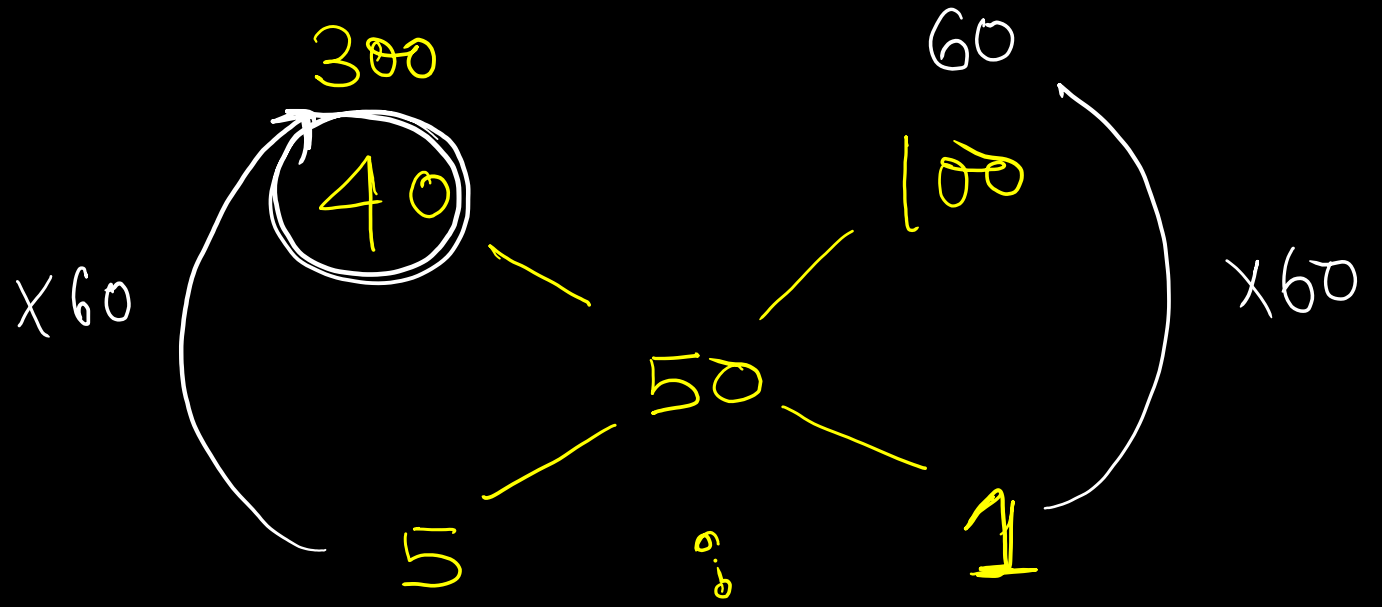


CDS, AFCAT

Question2 :

300 grams of sugar solution has 40% of sugar in it. How much sugar should be added to make it 50% in the solution?





Question 3:

150 gram of sugar solution has 20% sugar in it. How much sugar should be added to make it 25% in the solution ?

In 50gm alloy of gold and silver. The gold is 80% by weight. How much gold should be mixed to this alloy so that the weight of gold would become 95%?

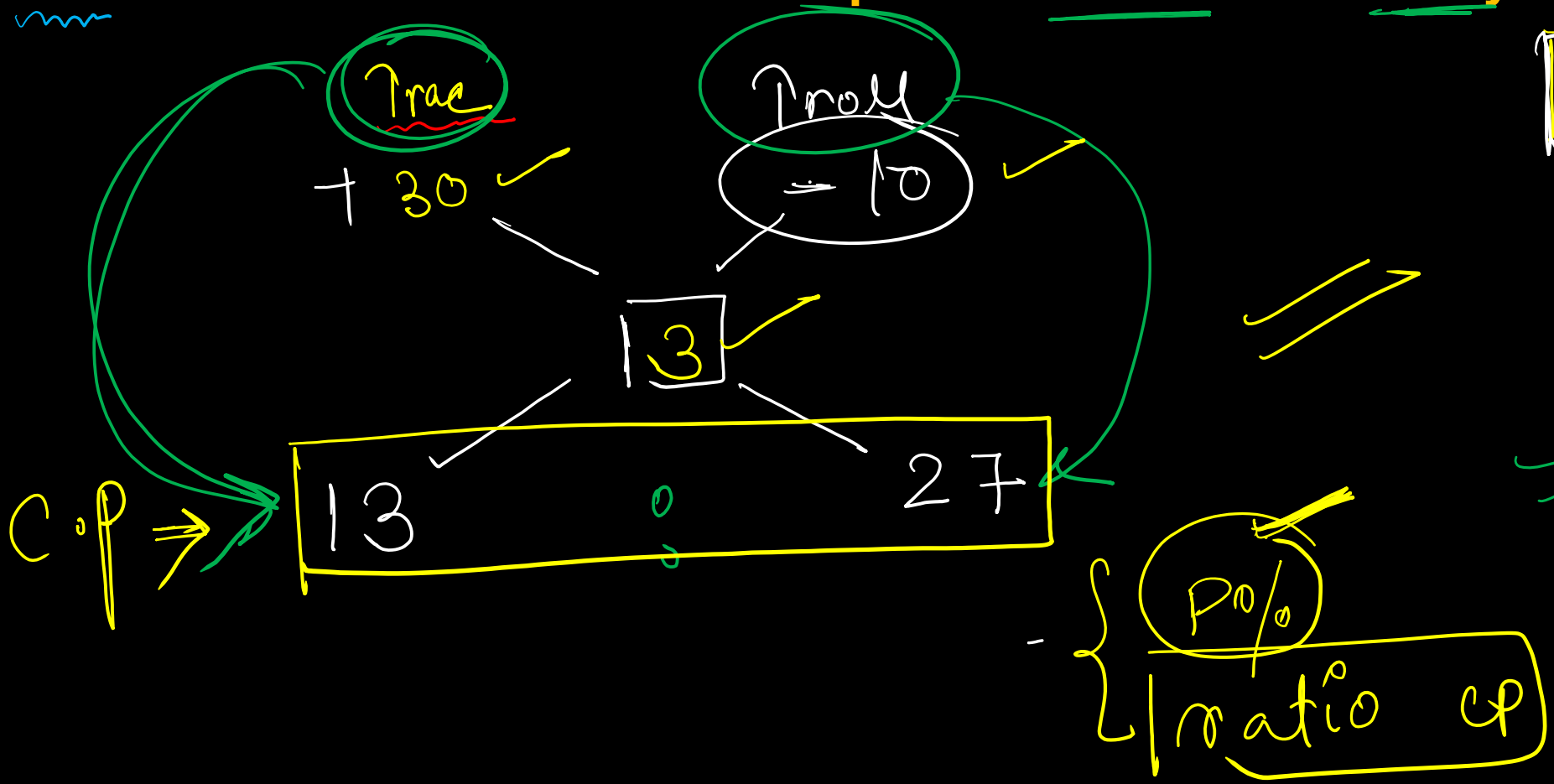
Question 5:

A mixture of 40 litres of milk and water contains 10% of water. How much water is to be added to the mixture so that the water may be 20% in the new mixture.

Type : Profit Loss – 6

Question1 :

A farmer purchased a Trolley and a Tractor for 8,00,000. He sold the Tractor at a profit of 30% and the Trolley at a loss of 10%, in this deal he got a profit of 3%. What is the ratio of the cost price of tractor and trolley.



TCS NQT 2022

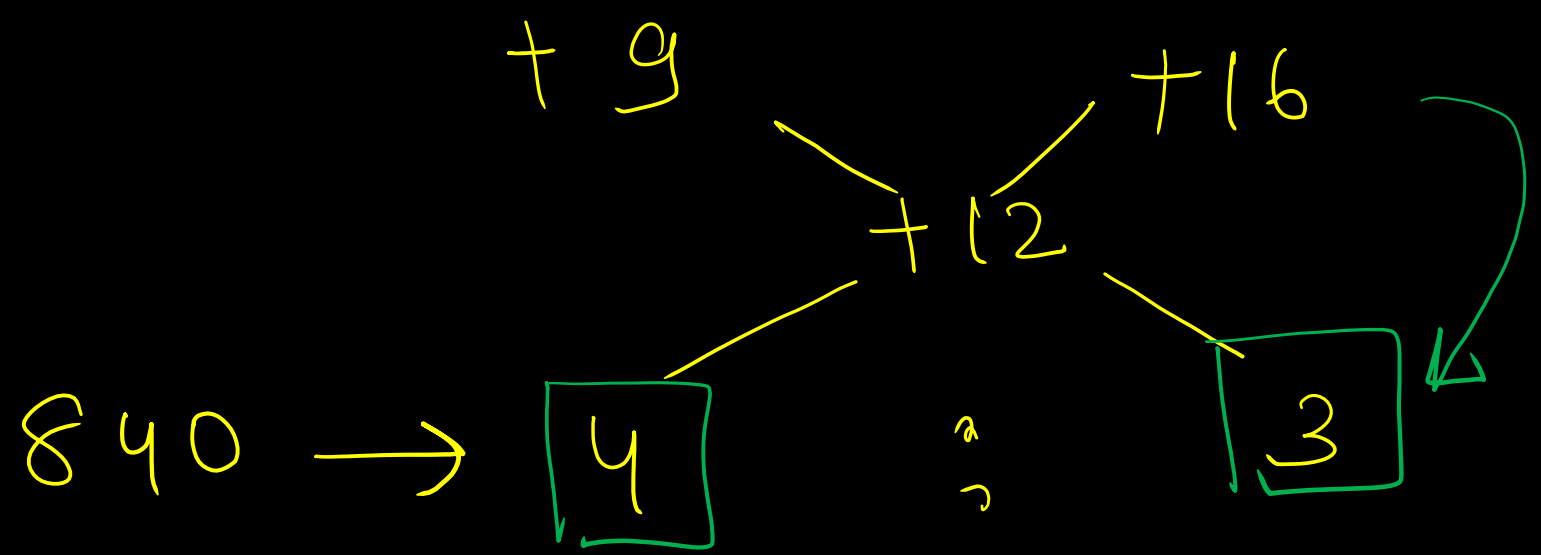
a) 27:13
b) 13:27
c) 54:31
d) 13:54

Question 2 :

A merchant has 840 kg of rice, part of which he sells at 9% profit and the rest at 16% profit. He gains 12% profit on the whole. What is the quantity sold at 16% profit?

1) 480 kg 2) 240 kg 3) 360 kg 4) 600 kg 5) None of these

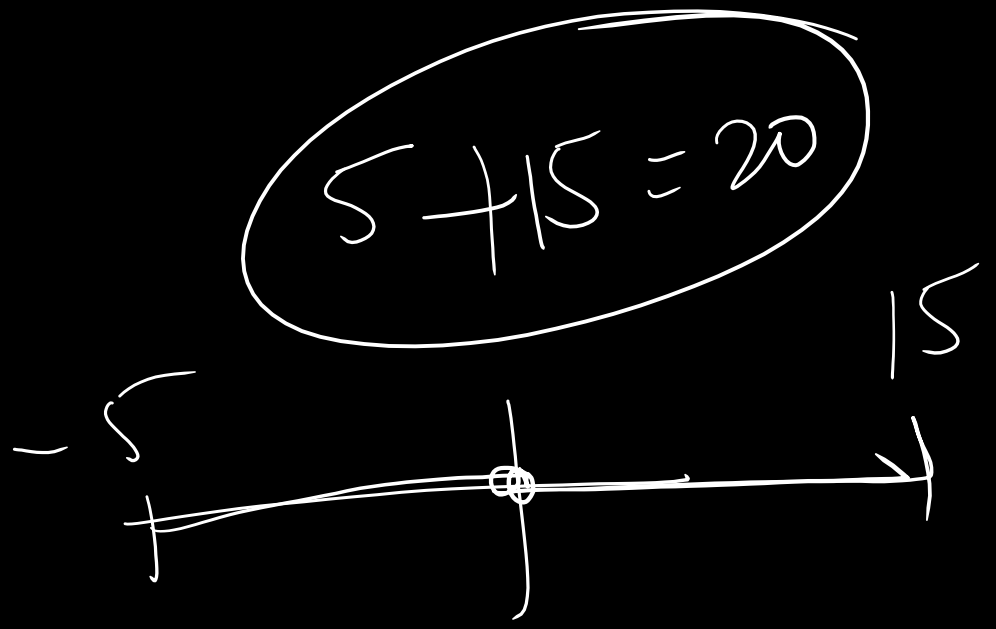
$\frac{3}{7} \times 840$



Question3 :

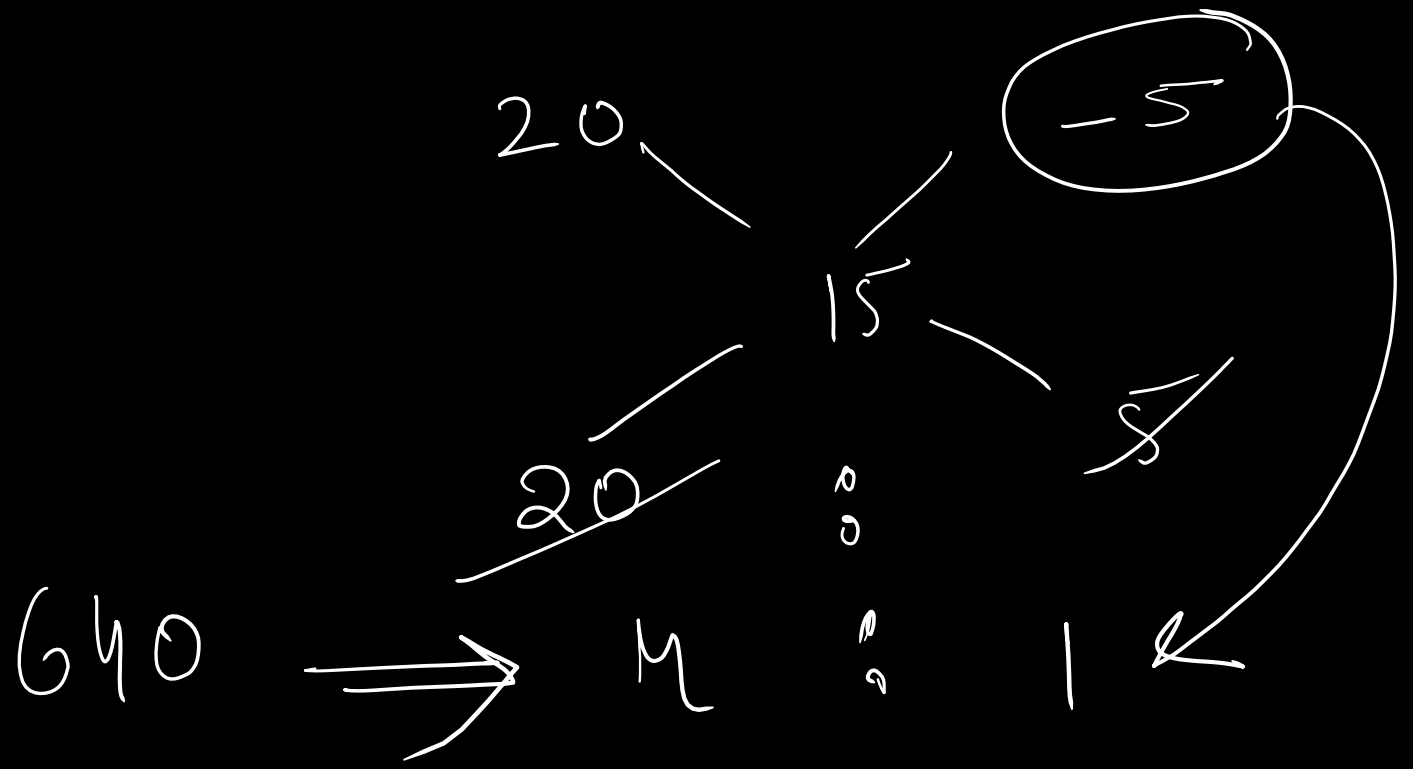
A trader has 4000 kg of tea, part of which he sells at 8% profit and the rest at 18% profit. He gains 14% on the whole. What quantity of tea was sold at 8% profit?

1) 480 kg 2) 200 kg 3) 2400 kg 4) 1600 kg 5) None of these



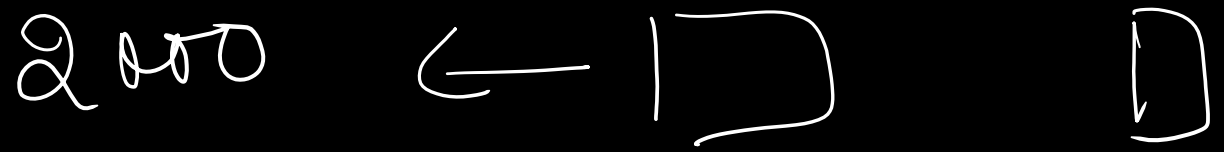
Question 4:

A trader bought 640 kg of rice. He sold a part of rice at 20% profit and the rest at 5% loss. He earned a profit of 15% in the entire transaction. What is the quantity (in kg) of rice that he sold at 5% loss?



Question 5:

The total cost price of two articles is Rs. 2,000. One of them is sold at a profit of 12% and the other at a loss of 12% The overall gain in the transaction is 1.2% The cost price of the article for which there was a profit was?



Question 6 :

A milkman buys two cows for Rs. 3000. He sells first cow at a profit of 22% and the second cow at a loss of 8%. What is the CP of second cow if in the whole transaction there is no profit no loss?

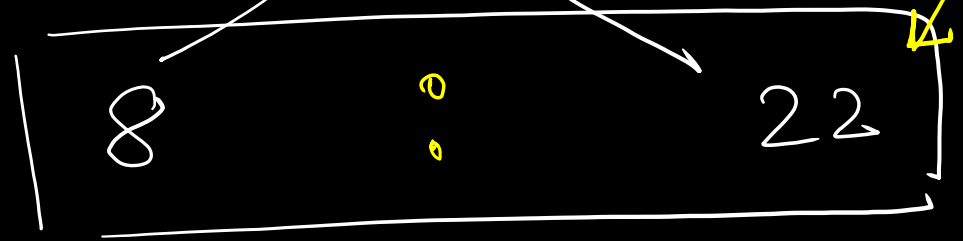
TITA

$\frac{22}{30} \times 3000 = 2200$

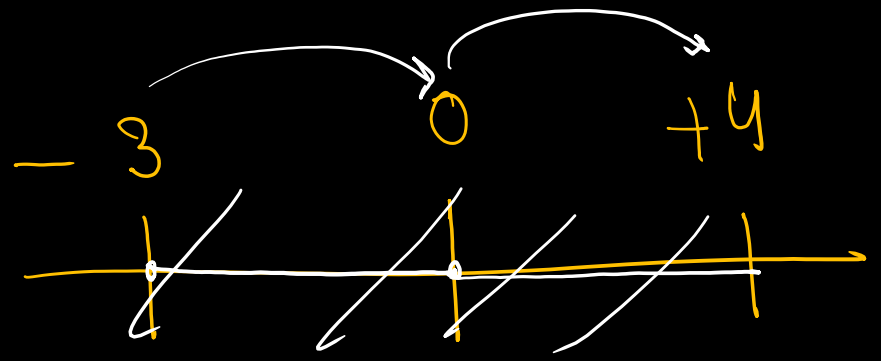
Cow$_1$: +22

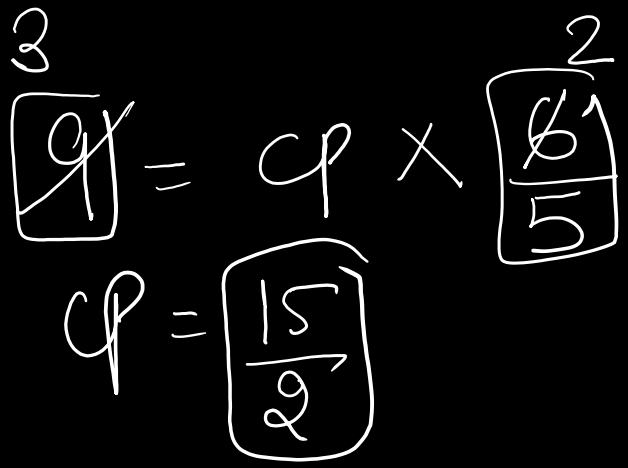
Cow$_2$: −8

3000 CP ⇒



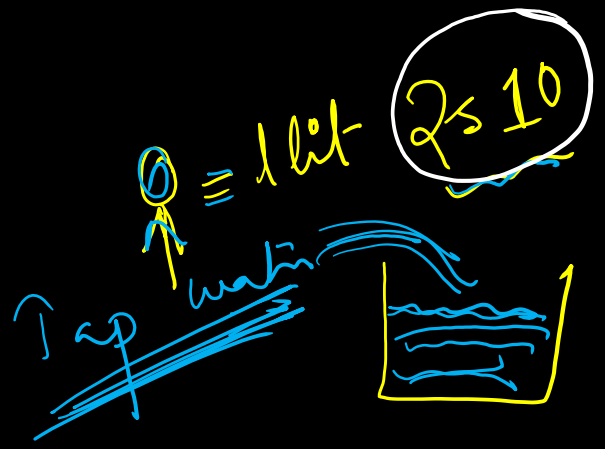
TYPE – 7

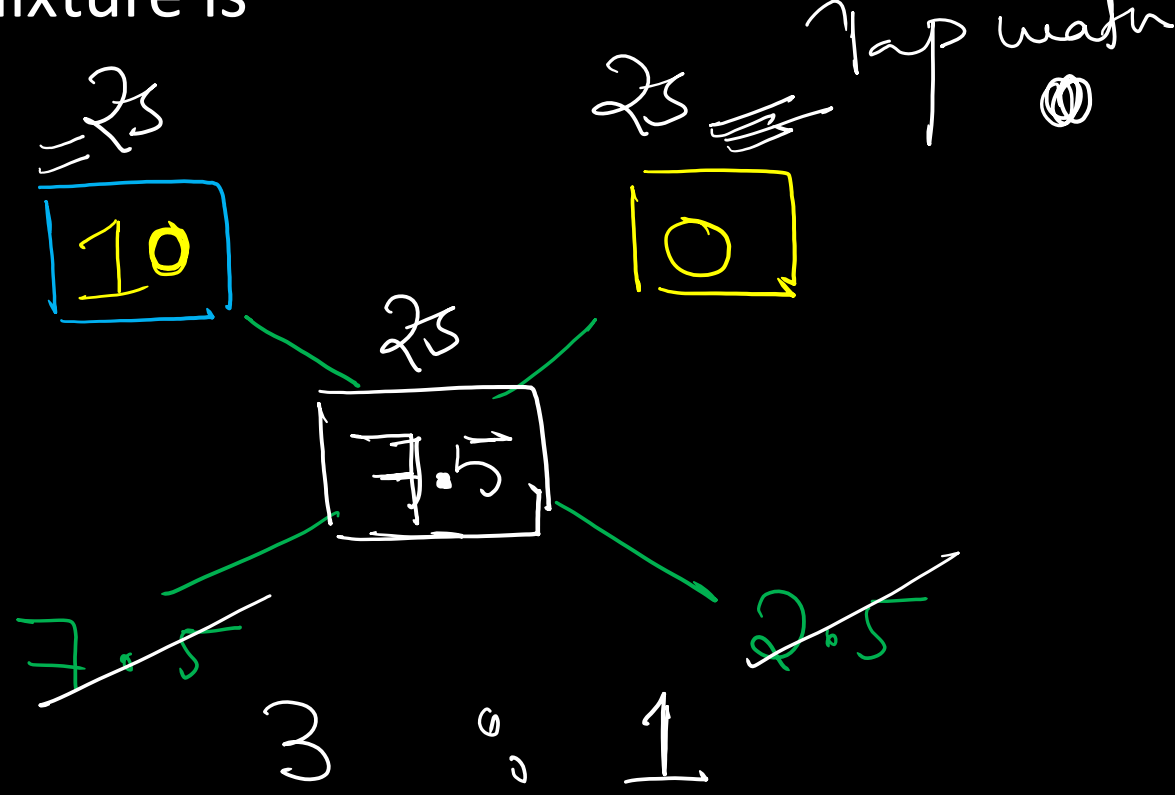




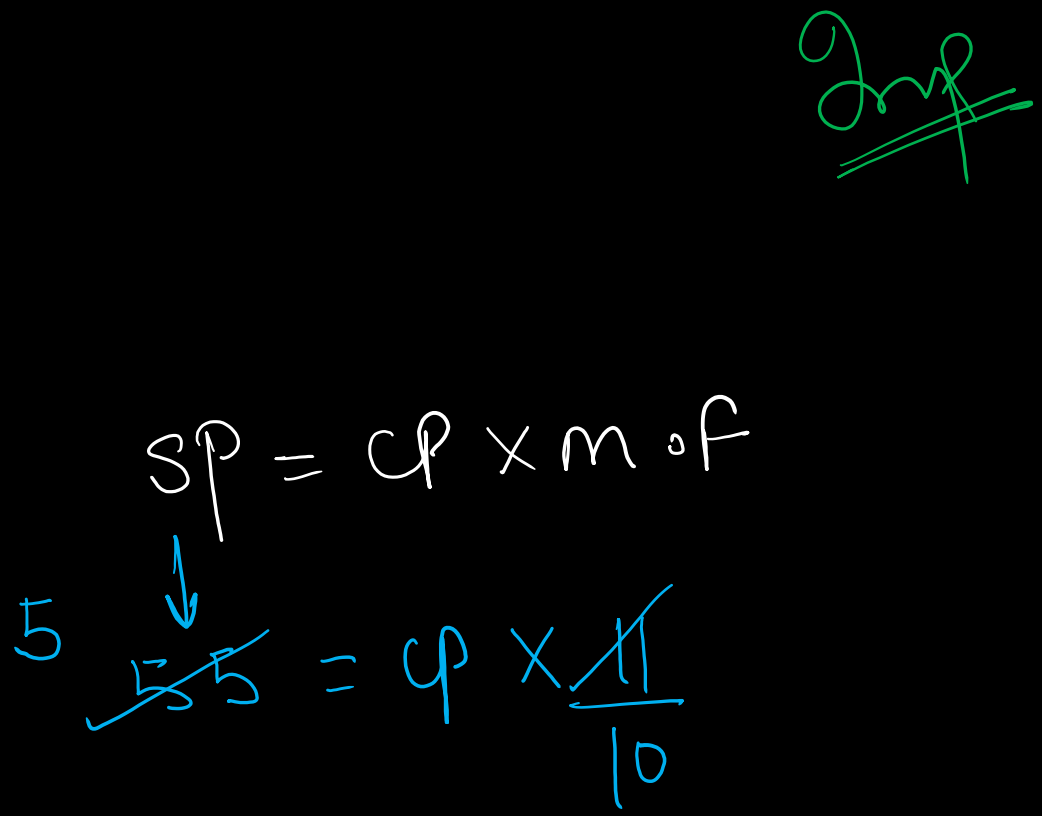
Question1 :

A milkman makes 20% profit by selling milk mixed with water at Rs 9 per litre. If the cost price of 1 litre pure milk Is Rs 10, then the ratio of milk and water in the mixture is





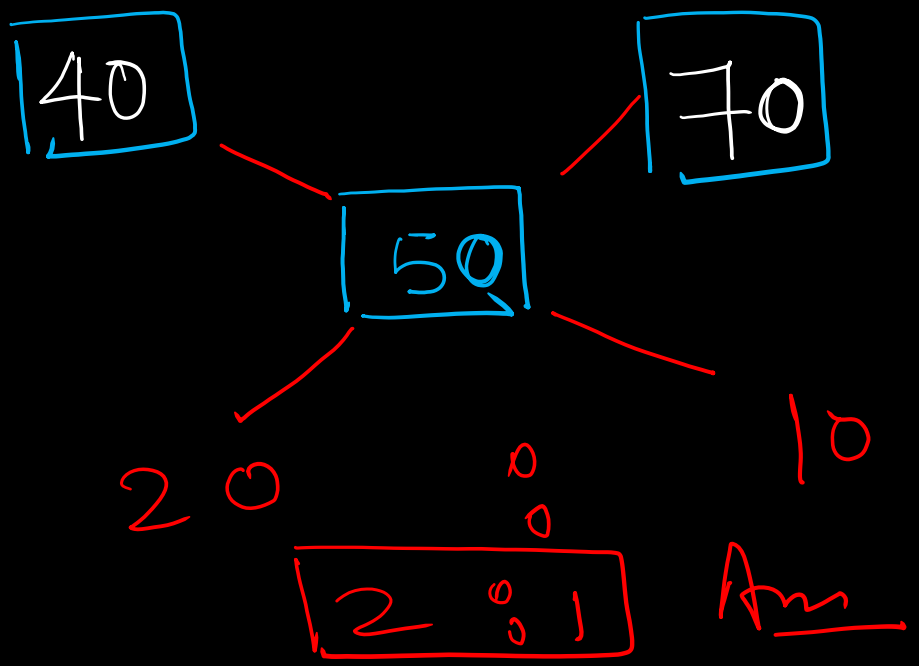
Type –8



Question1 :

A person bought 2 varieties of tea, 1st at Rs.40/kg and 2nd at Rs.70/kg. He mixed both varieties and sold the mixture at Rs.55/kg making a profit of 10%. In what ratio did he mixed the two varieties of tea?

(A) 1:2 (B) 2:3 (C) 3:2 (D) 2:1



Question2 :

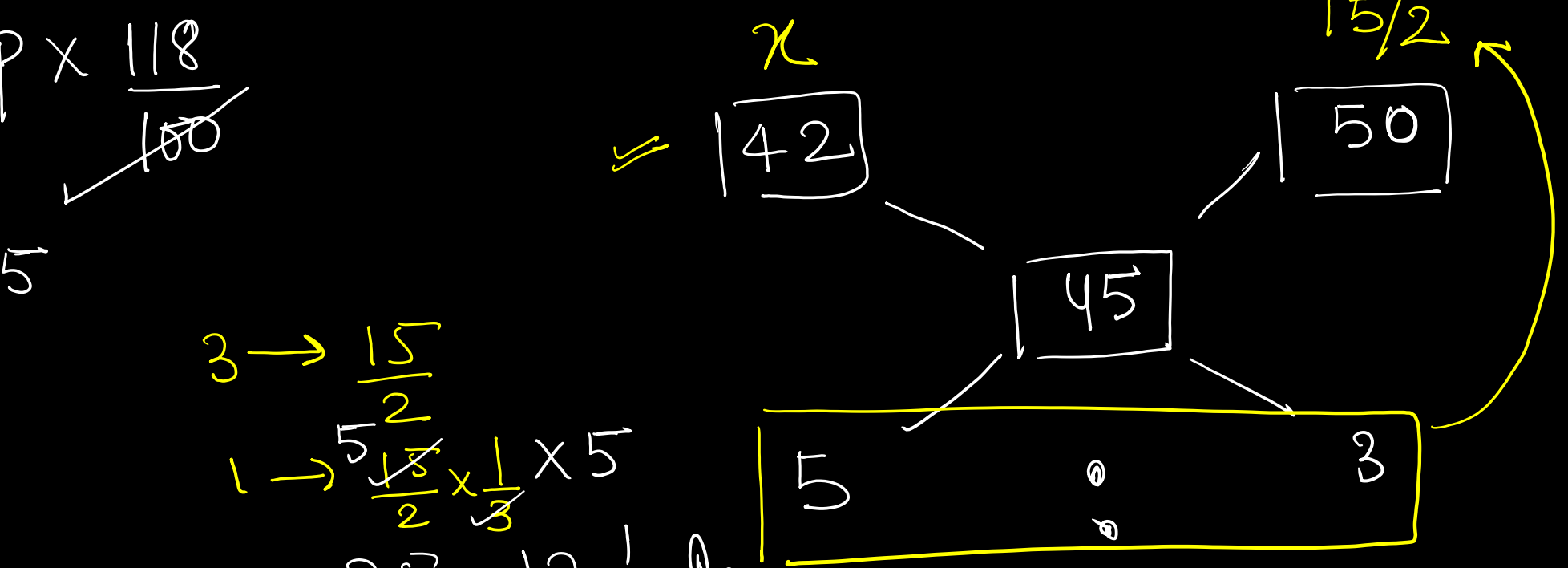
How many kg of rice costing ₹ 42 per kg should be mixed with $7\frac{1}{2}$ kg rice costing ₹50 per kg so that by selling the mixture at ₹ 53.10 per kg, there is a gain of 18%? (

$SP = CP \times M.F$

$\downarrow$

$\frac{5310}{100} = CP \times \frac{118}{100}$

$CP = 45$



$3 \rightarrow \frac{15}{2}$

$1 \rightarrow 5 \quad \frac{15}{2} \times \frac{1}{3} \times 5$

$\frac{25}{2} = 12\frac{1}{2}$ kg

Question 3:

How much of salt at 42 paise/kg must be mixed with 25 kg of salt at 24 paise/kg, so that a profit of 25% is obtained by selling the mixture at 40 paise/kg?

1) 25 kg 2) 20 kg 3) 30 kg 4) 24 kg 5) None of these

Question 4:

How many kilograms of sugar costing Rs. 9 per kg must be mixed with 27kg of sugar costing Rs.7 per kg so that there may be gain of 10% by selling the mixture at Rs.9.24 per kg?

A.60KG B.63KG C.50 D.77KG

Question 5:

A trader bought 640 kg of rice. He sold a part of the rice at 20% profit and the rest at 5% loss. He earned a profit of 15% in the entire transaction. What is the ratio of the quantity of rice that he sold at a loss of 5% to that of the quantity that he sold at a profit of 20%?

(a)1:3

(b) 4:1

(c)1:4

(d)3:1

Type – 9

Question1 :

A sum of 5000 is divided into two parts such that the first part is invested at 4% p.a. and the second at 5% p.a. simple interest. The total interest earned from both the investments after one year is 235. Find the amount invested in first part.

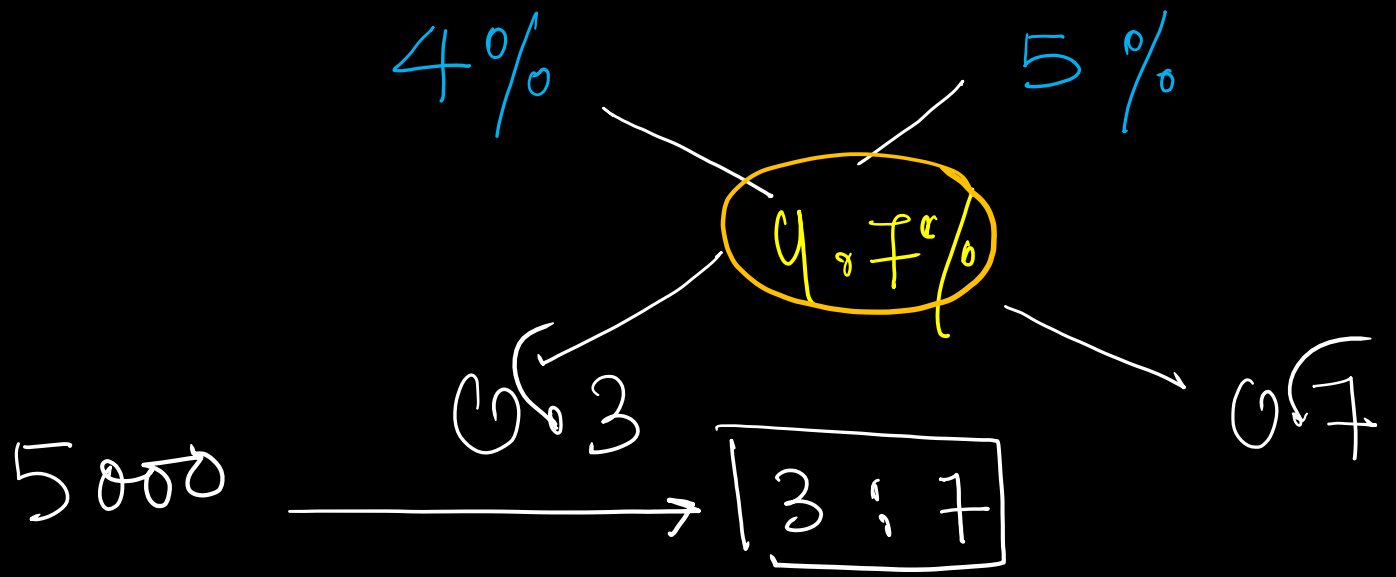
A. 1200
B. 1500
C. 1000
D. 1800

47

$\frac{235}{5000} \times 100$

10

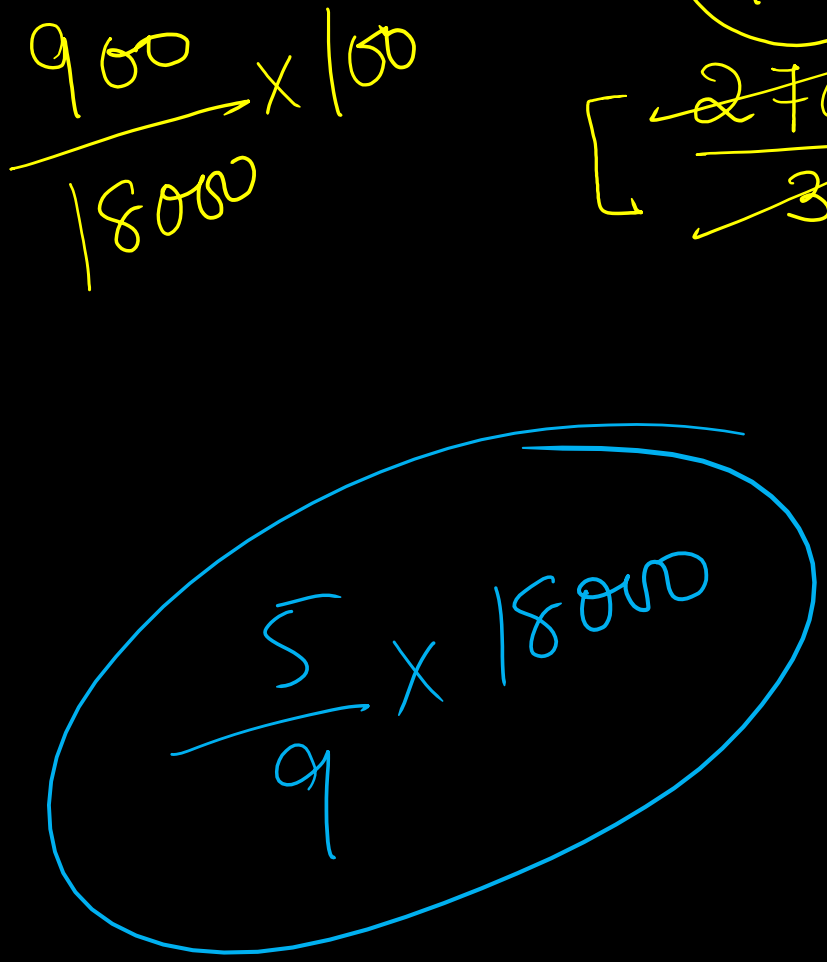
$\frac{3}{10} \times 5000$



Question 2:

Mr. Ravi lent Rs. 18000 partly at 3% and 12% p.a. simple interest. The total interest received after 3 years is Rs. 2700. The difference between the sum lent at 3% and 12% is:

A. Rs. 10000
B. BRs. 4000
C. Rs. 14000
D. DRs. 2000



Question 3:

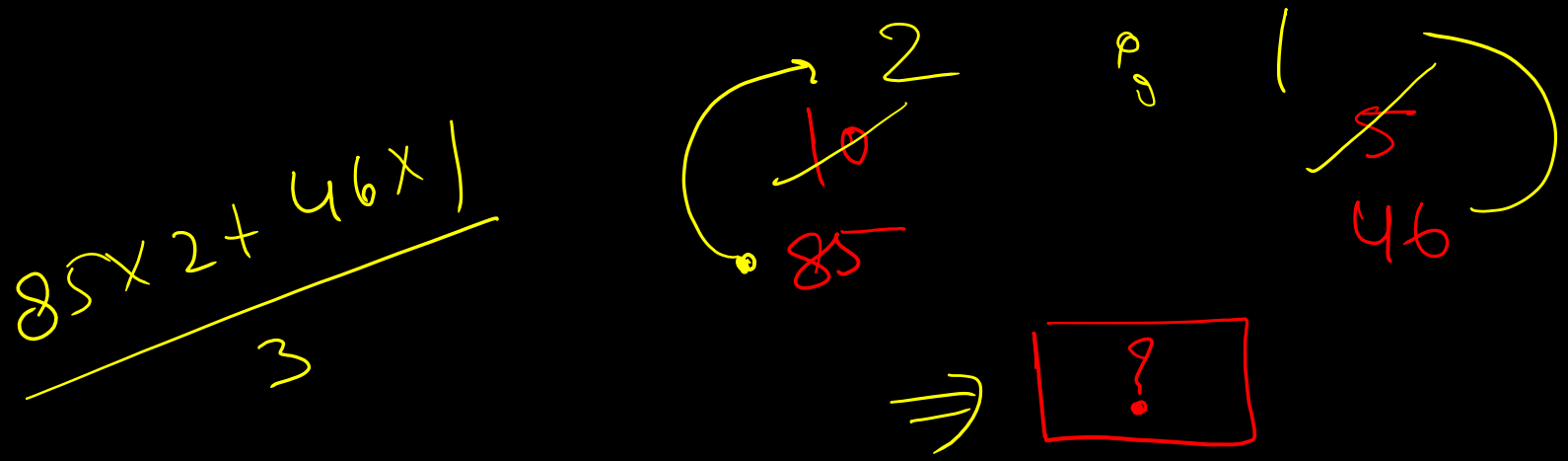
Mr. Mani invested an amount of Rs. 12000 at the simple interest rate of 10% per annum and another amount at the simple interest rate of 20% per annum. The total interest earned at the end of one year on the total amount invested became 14% per annum. Find the total amount invested.

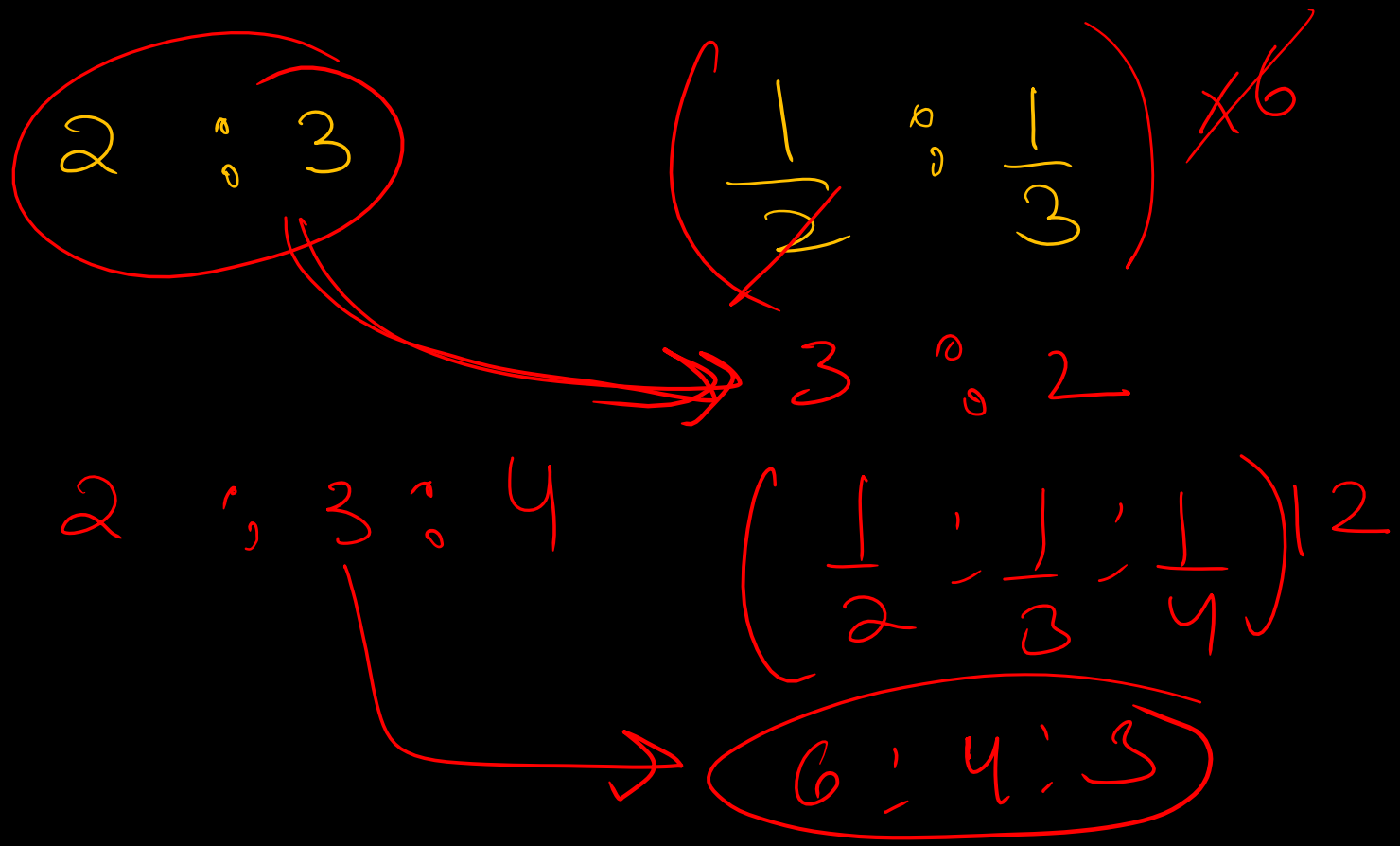
A. Rs. 20000
B. Rs. 28000
C. Rs. 20800
D. Rs. 18000

TYPE-10

Question1 :

10 kg of superior quality of rice is mixed with 5 kg of inferior quality of rice. The prices of superior quality and inferior quality rice are Rs 85 and Rs 46, respectively. Find the average price per kg of the mixture




2 : 3
$\left(\frac{1}{2} : \frac{1}{3}\right)\times 6$
3 : 2
2 : 3 : 4
$\left(\frac{1}{2} : \frac{1}{3} : \frac{1}{4}\right)\times 12$
6 : 4 : 3