

# GATE ALL BRANCHES



General Aptitude

**QUANTITATIVE APTITUDE**

Lecture No.- 06



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# Recap of Previous Lecture



Topic

Profit & Loss

$$\frac{S.P.}{C.P.}$$





# Topics to be Covered



**Topic-1**

More on Profit Loss (Discount)

**Topic-2**

Mixtures & Alligation



# Discounts:

↓  
Marked price — Percentages

S.P.
—
C.P.



[MCQ]

$$\frac{S.P.}{C.P.} = 1.25 \Rightarrow S.P. = 1.25 C.P.$$



#Q. By giving a discount of 25%, a shopkeeper gains 25%. If he gives a discount of 40%, find his gain or loss%.

Assignment

$$\rightarrow S.P. = 75\% M.P.$$

$$\rightarrow S.P. = 125\% C.P.$$

$$75\% M.P. = 125\% C.P.$$

$$\Rightarrow M.P. = \frac{5}{3} C.P.$$

<u>M.P.</u>	<u>C.P.</u>
Discount	Profit
25%	25%
40%	?

$$\frac{S.P.}{C.P.} = 1$$

No Profit No Loss

$$60\% M.P. = \frac{60}{100} \times \frac{5}{3} C.P.$$

$$S.P. = C.P.$$

$$\begin{array}{r} 3 \text{ 60} \\ 7500 \\ \hline 105 \\ 8 \\ 1 \end{array}$$

$$\frac{75}{C.P} = 1.25$$

$$\begin{array}{r} 3 \text{ 60} \\ 75 \\ \hline 1.25 \\ 8 \\ 1 \end{array} = C.P.$$

$$M.P. = \underline{2100}$$

$$S.P. = 275$$

$$C.P. = 260$$

$$S.P.N = 260$$

No P No L



[MCQ]

✓ 12.5% Profit 125



#Q. A trader gains 20% by giving a discount of 20%, if he gives a discount of 25% then find his P% or L%.

Assignment

Disc	Profit
<u>20%</u>	<u>20%</u>
<u>25%</u>	<u>?</u>

$$M.P. = ₹ 100$$

$$S.P. = ₹ 80$$

$$\frac{80}{C.P.} = 1.2$$

$$\frac{800}{312} = C.P.$$

$$312$$

$$S.P.N = 75$$

$$\frac{S.P.N}{C.P.} = \frac{3}{75} \times \frac{3}{200} = \frac{9}{8} = 1.125$$

$$280: M.P. = \frac{3}{2} C.P.$$

$$M.P. = \frac{3}{2} C.P.$$

$$\frac{S.P.N}{C.P.} = \frac{9}{8} = 1.125$$



[MCQ]



#Q. An article was sold at a profit of 20%. If both cost price and selling price are ₹100 less each, then magnitude of the percentage of profit would have been 4 percentage points more than that in the first case. Then the cost price is

- A** ₹ 500
- B** ₹ 600
- C** ₹ 800
- D** None of these

$$\frac{S.P}{C.P} = 1.2$$

$$S.P = 1.2 C.P$$

$$\frac{S.P - 100}{C.P - 100} = 1.24$$

Assignment

$$1.2 C.P - 100 = 1.24 C.P$$
$$-124$$

$$\Rightarrow 0.04 C.P = 24$$
$$C.P = \frac{24}{0.04}$$

$$C.P = 600$$



[MCQ]

$$C.P = \frac{300}{5} = \boxed{60}$$



#Q. 5kg of ghee was bought by Vinod for ₹300. One kg from spoilt. He sells the remaining in such a way that on the whole he incurs a loss of 10%. At what price per kg does he sell the ghee?

Assignment

**A** ₹ 46.25

**B** ₹ 45.70

**C** ₹ 67.50

**D** ₹ 46.60

$$\frac{S.P}{C.P}$$

$$\frac{4}{5} \times \frac{x}{60} = 0.9$$

$$\Rightarrow \frac{4x}{300} = 0.9$$

$$x = 67.5$$



# Puzzle:

7x? = 0/5e

$$M + W + K = 100$$

$$(4M + 3W + \frac{1}{2}K = 100) \times 2$$



#Q. A function hall was filled with 100 guests including men, women and kids.

A-40 100 biscuits has to be distributed among these guests, such that each man gets 4 biscuits, each woman as 3 and each kid gets 1/2 biscuits. How many men, women and kids are there in function hall?

$$7M + 5W = 100$$

M → 5	(x4)	20
W → 13	(x3)	39
K → 82	(x1/2)	41
		<u>100</u>

$$8M + 6W + K = 200$$

$$M + W + K = 100$$

$$7M + 5W = 100$$

M - 10	40
W - 6	18
K - 84	42
<u>100</u>	<u>100</u>



# Puzzle:

4  
A-40

B-1

C  
C-0.2



$$A + B + C = 280$$

$$40A + B + 0.2C = 280$$

No.	Cost	TOTAL Money	:	280/-
		TOTAL Number of Product	:	280

A-4

B-81

C-195  
280

160

81

39  
280

$$A + B + C = 40A + B + 0.2C$$

$$39A = 0.8C$$

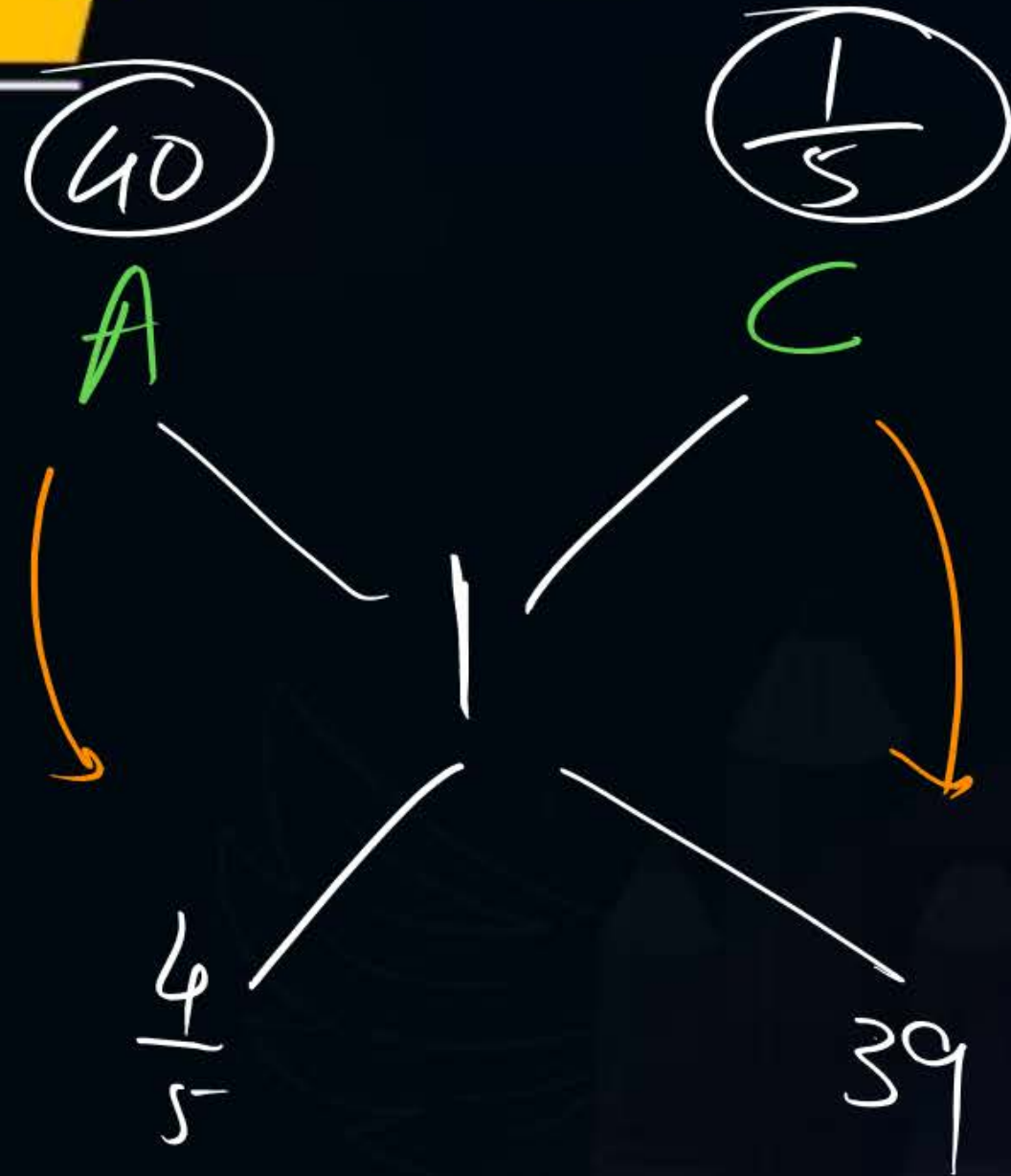
$$\frac{A}{C} = \frac{0.8}{39}$$

$$\frac{4}{8} = \frac{390}{195}$$

# Mixtures & Alligations

$$\underline{\underline{A:C = \frac{4}{5} : 39}}$$

$$= \underline{\underline{4 : 195}}$$





[MCQ]



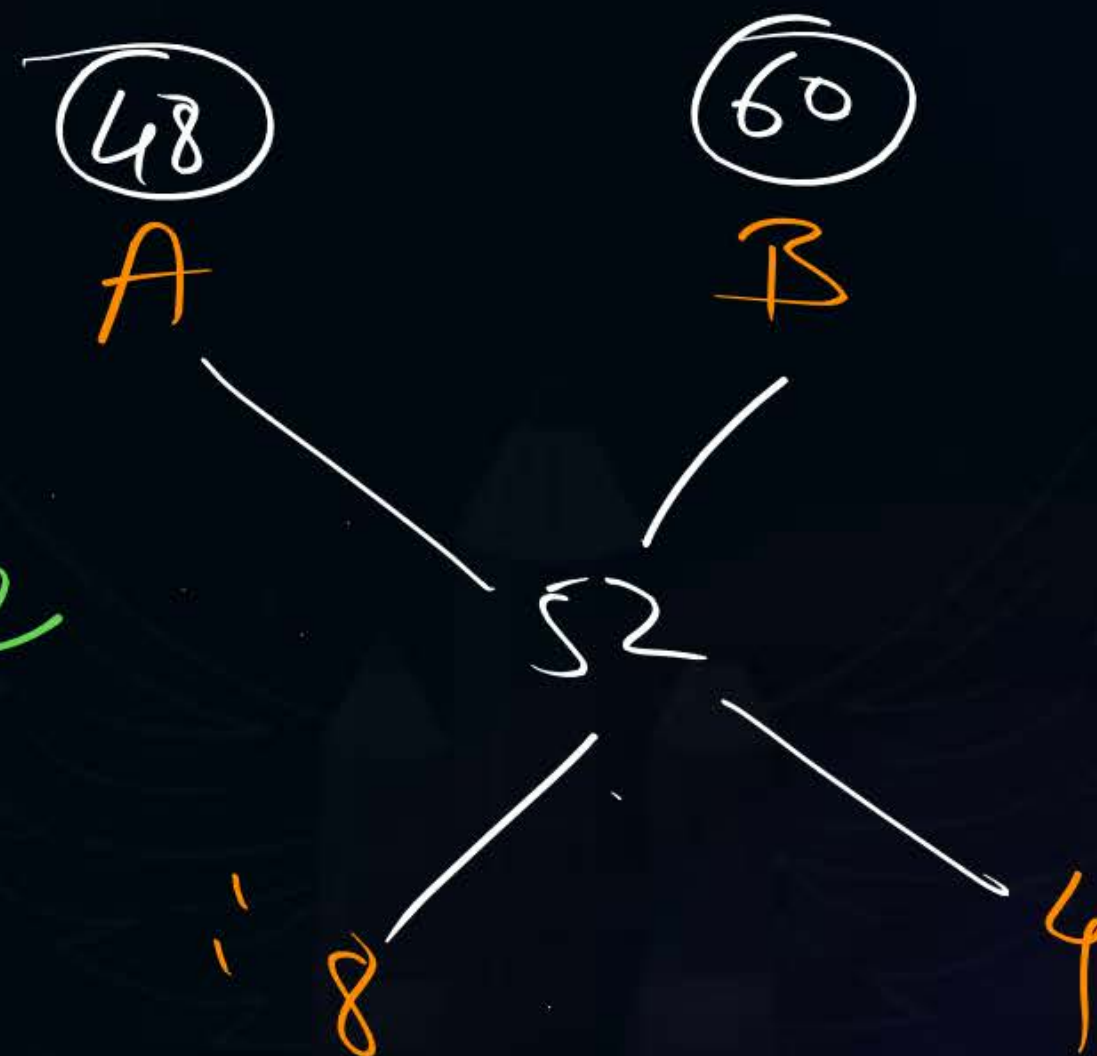
#Q. A trader purchases two varieties of rice 'A' & 'B' at the rate of ₹48/kg and ₹60/kg respectively. In what ratio he should mix he two varieties, so that the mixture cost becomes ₹52/kg?

$A:B$   
~~156~~ 52 96  $\Rightarrow 2$   
60  $\Rightarrow 1$

1:2

2:1

$A:B = 8:4$   
2:1



[MCQ]



#Q. A trader purchases two varieties of Sugar 'P' & 'Q' at the rate of ₹42/kg and ₹80/kg respectively. In what ratio he should mix he two varieties, so that he can sell the mixture at ₹78/kg by getting 30% profit?

$$P:Q = \cancel{20}:18$$
$$\underline{\underline{10:9}}$$



$$S.P = ₹ 78$$

$$\frac{78}{C.P} = 1.3$$

$$\frac{78}{1.3} = C.P$$

$$60 = C.P$$



[MCQ]



#Q. In a class with 360 students, the average age of all the boys is 24 years whereas average age of all the girls is 18 years. If average age of whole class is 20 years, then find the number of girls in that class.

- A** 300
- B** 40
- C** 120
- D** 240



$$B : G = 2 : 4 \\ = 1 : 2$$

$$\frac{2}{8} \times \frac{120}{360} = \underline{\underline{240}}$$

[MCQ]



#Q. A merchant sells 1600 horses at an overall profit of 25%. Some of them he sold at 20% profit whereas remaining at 40% profit. Find the number of horses he sold at 40% profit.

**A**

400

**B**

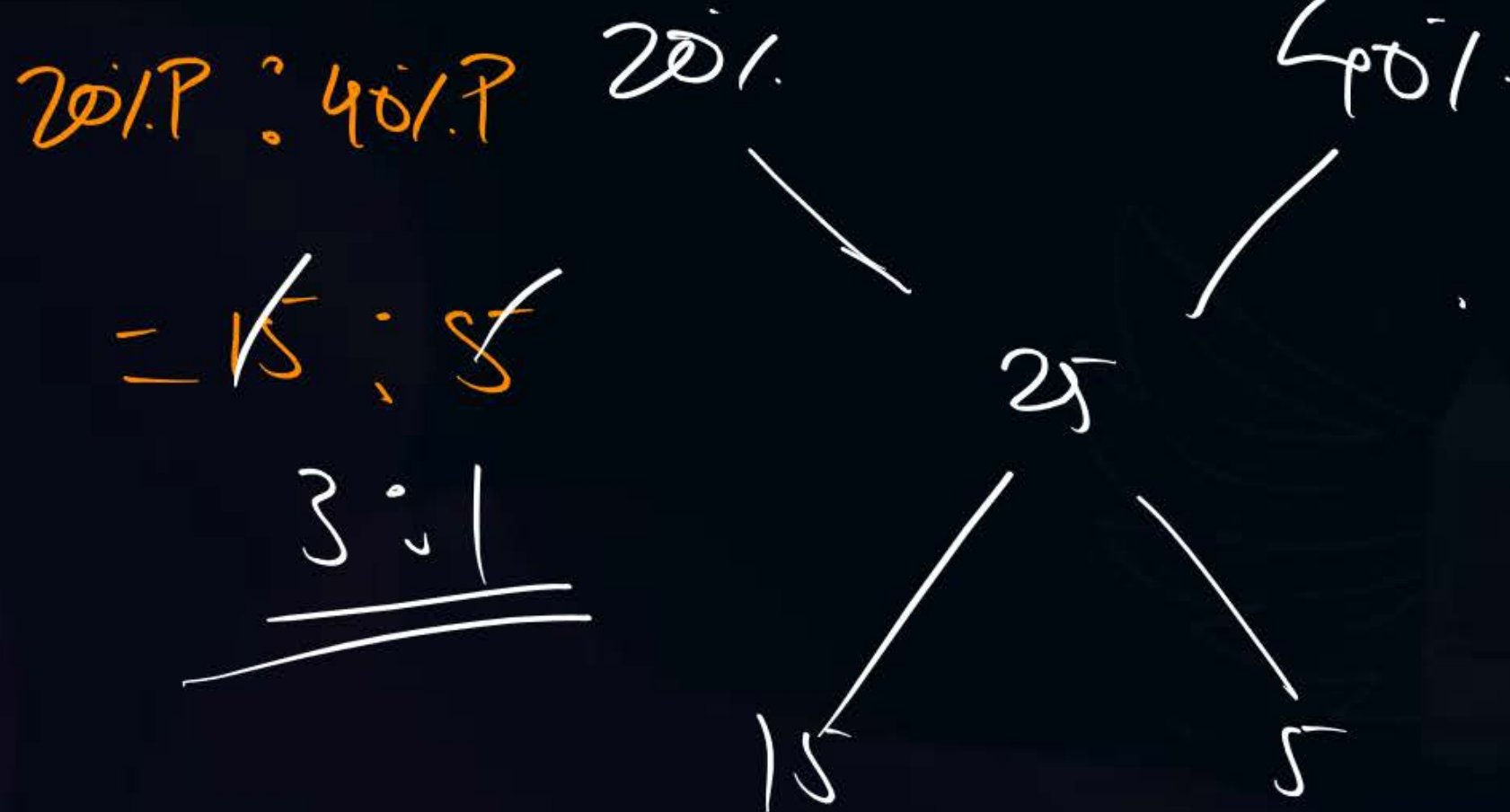
1200

**C**

1240

**D**

300



$$\frac{1}{4} \times 1600 = 400$$



[MCQ]



#Q. In a mixture of 40 litres, the ratio of milk and water is 4:1. How much water must be added to this mixture so that the ratio of milk and water becomes 2:3?

- A** 20 litres
- B** 30 litres
- C** 32 litres
- D** 40 litres

40 lit

Milk	Water
32 lit	8 lit
=	=
$\frac{32}{8+x}$	$= \frac{2}{3}$
$96 = 16 + 2x$	
<u><math>x = 40</math></u>	

Milk: 1, Water: 1

Milk:  $\frac{1}{5}$ , Water:  $\frac{2}{5}$

Milk:  $\frac{2}{5}$ , Water:  $\frac{2}{5}$

40:60 = Milk: Water

[MCQ]

Iron



#Q. An alloy A consist of iron & copper in the ratio 5: 7, whereas alloy B consist iron & copper in the ratio 3: 1. In what ratio these two alloys are to be mixed to form a new alloy with iron & copper in the ratio 2: 1?

**A** 5:13

**B** 7:5

**C** 1:3

**D** 3:1

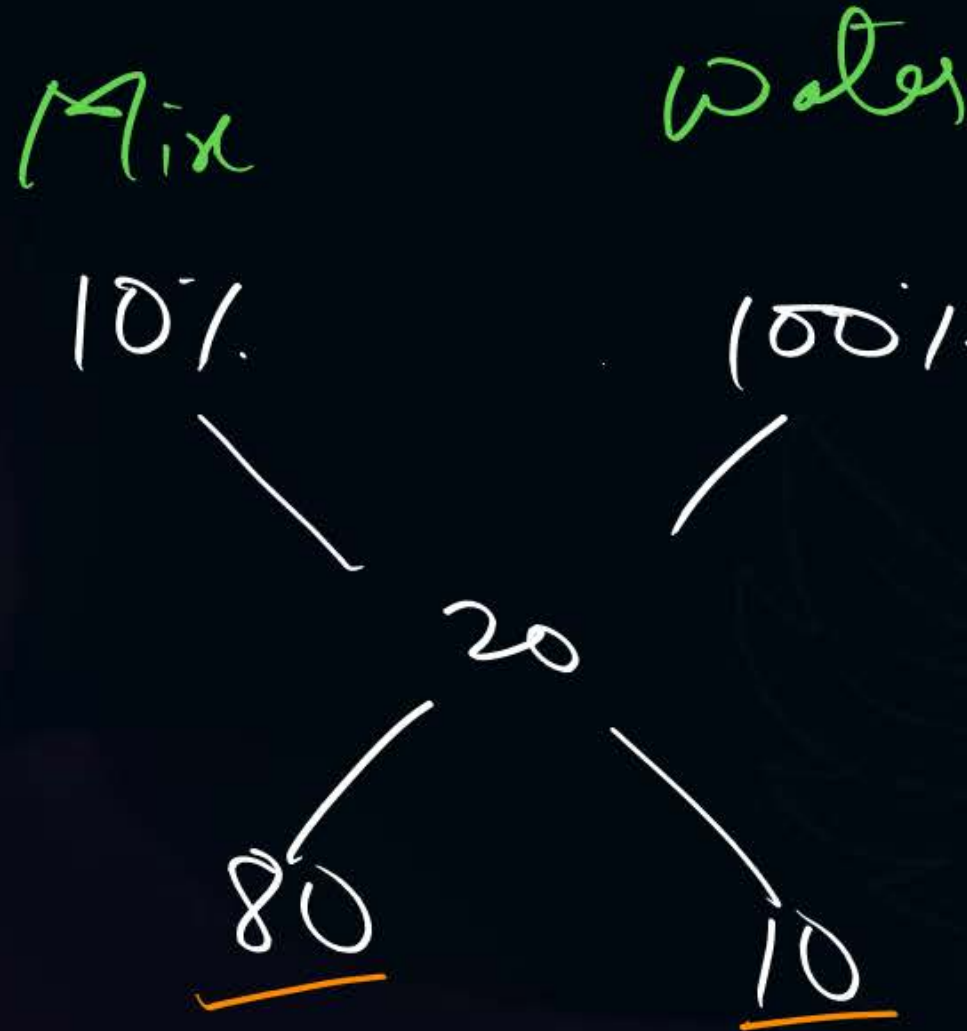
$$\begin{array}{ccc} A & & B \\ \frac{5}{12} & & \frac{3}{4} = \frac{9}{12} \\ & \searrow \quad \nearrow & \\ & \frac{2}{3} = \frac{8}{12} & \\ & \nearrow \quad \searrow & \\ \frac{1}{12} & & \frac{3}{12} \end{array}$$

$$A:B = \frac{1}{12} : \frac{3}{12}$$

$$A:B = \underline{\underline{1:3}}$$



<b>A</b>	3 litres
<b>B</b>	2 litres
<b>C</b>	1 litre
<b>D</b>	4 litres



Min: 10  
= 80 : 10  
= 8 : 1  
= 16 : 2

[MCQ]



#Q. A mixture contains milk and water in the ratio 5:1. On adding 5 liters of water, the ratio of milk to water becomes 5:2. the quantity of milk in the mixture earlier was:

*Assignment*

- A** 16 litres
- B** 25 litres
- C** 32.5 litres
- D** 22.75 litres



[MCQ]



#Q. In what ratio must a grocer mix two varieties of pulses costing ₹15 and ₹20 per kg respectively so as to get a mixture worth ₹16.50 per kg?

*Assignment*

- A** 3:8
- B** 5:3
- C** 7:3
- D** 4:5

[MCQ]



#Q. In what ratio must Ankit mix two varieties of sugar worth ₹20 per kg and ₹32 per kg so that by selling the mixture at ₹36 per kg he may gain 20%?

Assignment

- A** 1:5
- B** 3:5
- C** 2:3
- D** 3:2





## 2 mins Summary



**Topic**

Mixtures & Alligations

Discount



**THANK - YOU**