



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35

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DEPARTMENT OF MECHATRONICS ENGINEERING

VQAR 1- QUANTITATIVE APTITUDE

AND REASONING

UNIT 1 – QUANTITATIVE ABILITY I

TOPIC 7 - Mixtures & Alligation & Partnership



MIXTURES



When two or more elements are mixed in a certain ratio, its called **Mixture**.

ALLIGATION

The rule which is used to find the ratio in which two or more elements are mixed together is called **Alligation**.





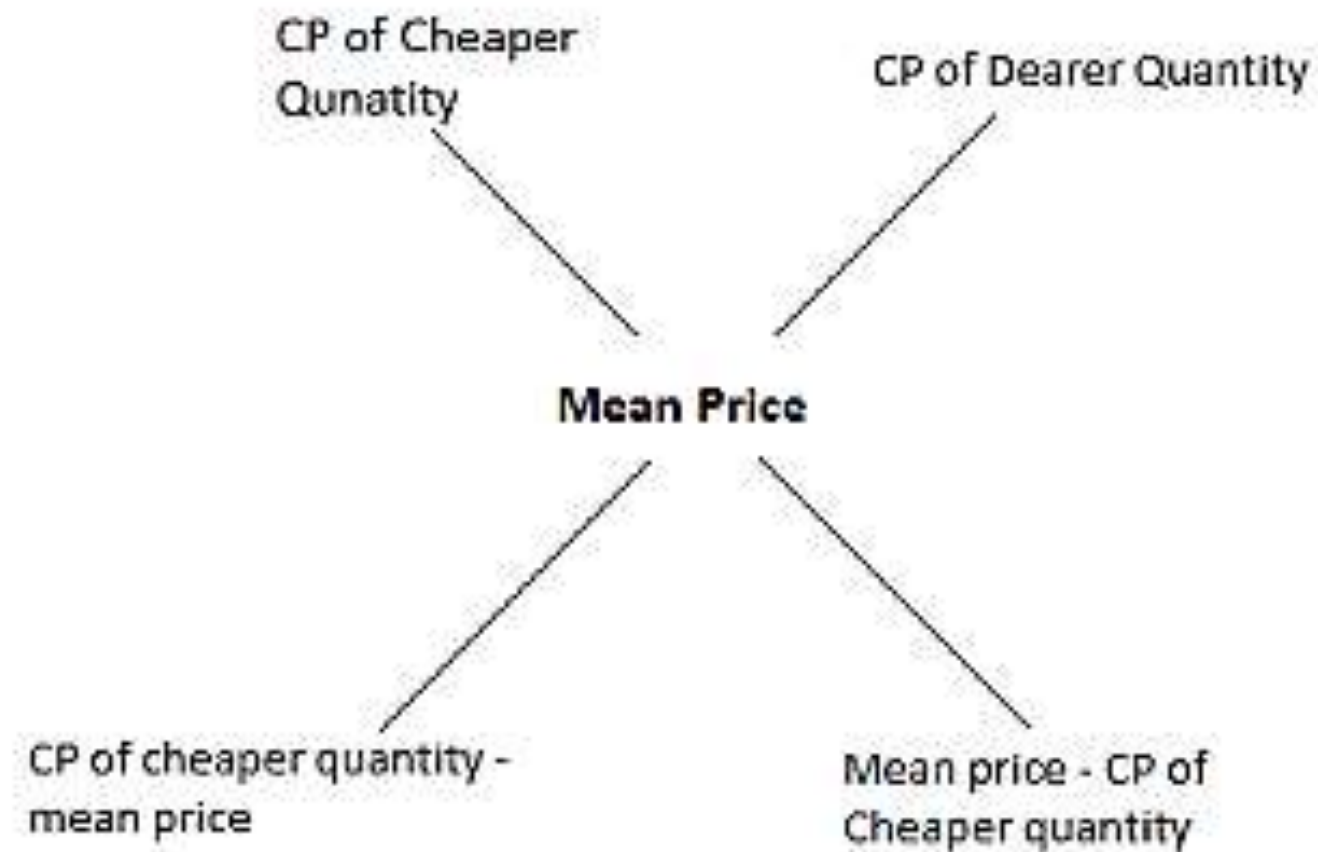
Cont.,



The basic formula which is used to find the ratio in which the ingredients are mixed is,

$$\frac{\text{Quantity of Cheaper}}{\text{Quantity of Dearer}} = \frac{\text{CP of Dearer} - \text{Mean Price}}{\text{Mean Price} - \text{CP of Cheaper}}$$

It is also called the rule of alligation and can also be represented as,





Lets discuss a case,

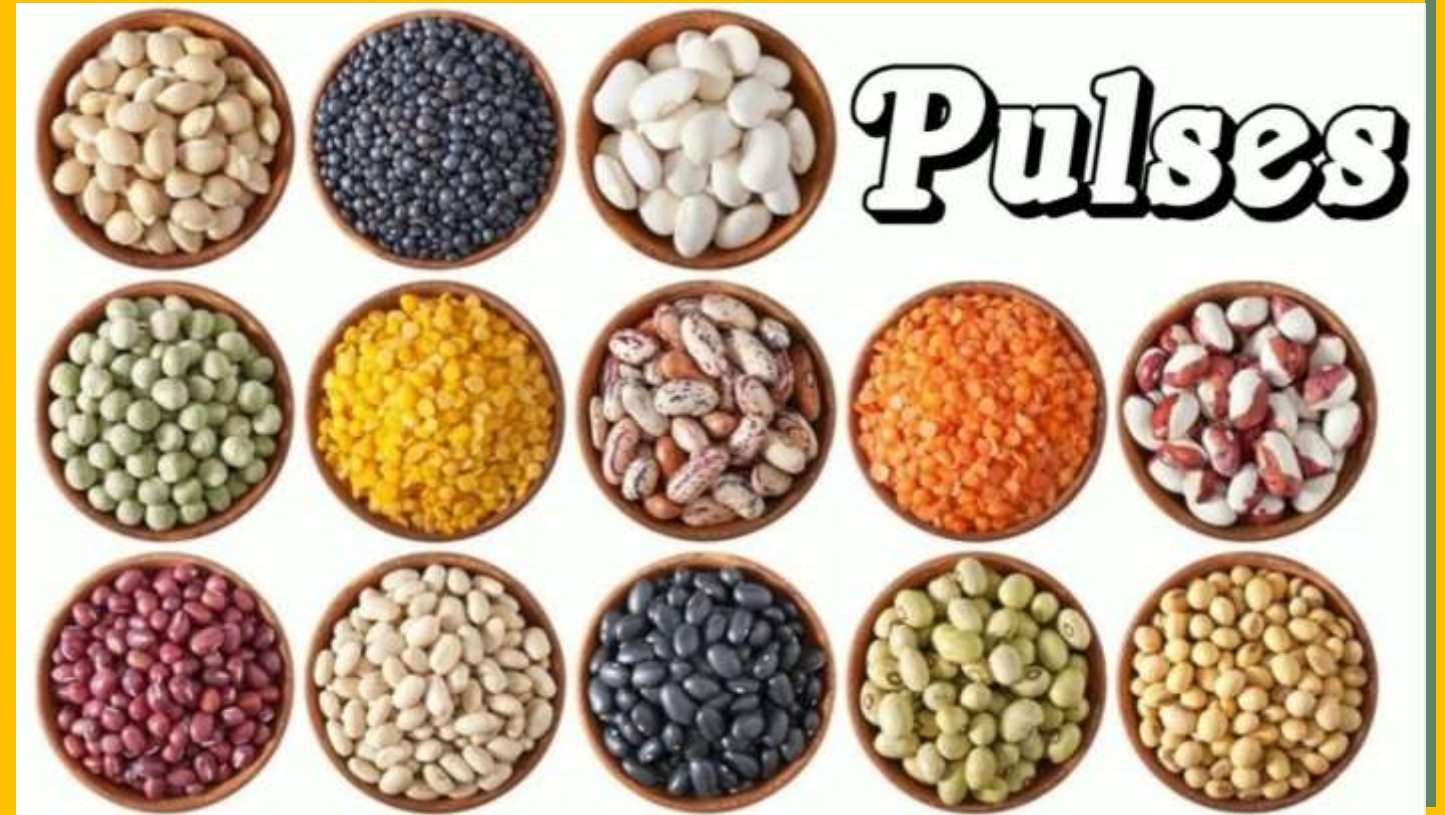


A grocer wishes to sell a mixture of two variety of pulses worth Rs.16 per kg. In what ratio must he mix the pulses to reach this selling price, when cost of one variety of pulses is Rs.14 per kg and the other is Rs.24 per kg?

Solution:

Using the rule of alligation,

$$\frac{\text{Quantity of Cheaper}}{\text{Quantity of Dearer}} = \frac{\text{CP of Dearer} - \text{Mean Price}}{\text{Mean Price} - \text{CP of Cheaper}}$$





Lets discuss a case,

When a sugar costing Rs.9 per kg is mixed with sugar costing Rs. 27 per kg, what is the ratio in which the shopkeeper must mix the two varieties of sugar so as to sell it at Rs.10 per kg, gaining 20% profit?

Selling Price of 1kg mixed varied of sugar = **Rs.10**

Cost Price of the same sugar = 120% of 10 = **Rs. 12**

Using the rule of alligation,

Quantity of Dearer: Quantity of Cheaper = $(27-12) : (12-9)$

⇒ Quantity of Dearer: Quantity of Cheaper = $15: 3 = 5:1$





Lets discuss a case,

Cost of two types of pulses is Rs.15 and Rs, 20 per kg, respectively. If both the pulses are mixed together in the ratio 2:3, then what should be the price of mixed variety pulses per kg?

Let the cost of mixed variety of pulse be Rs. x

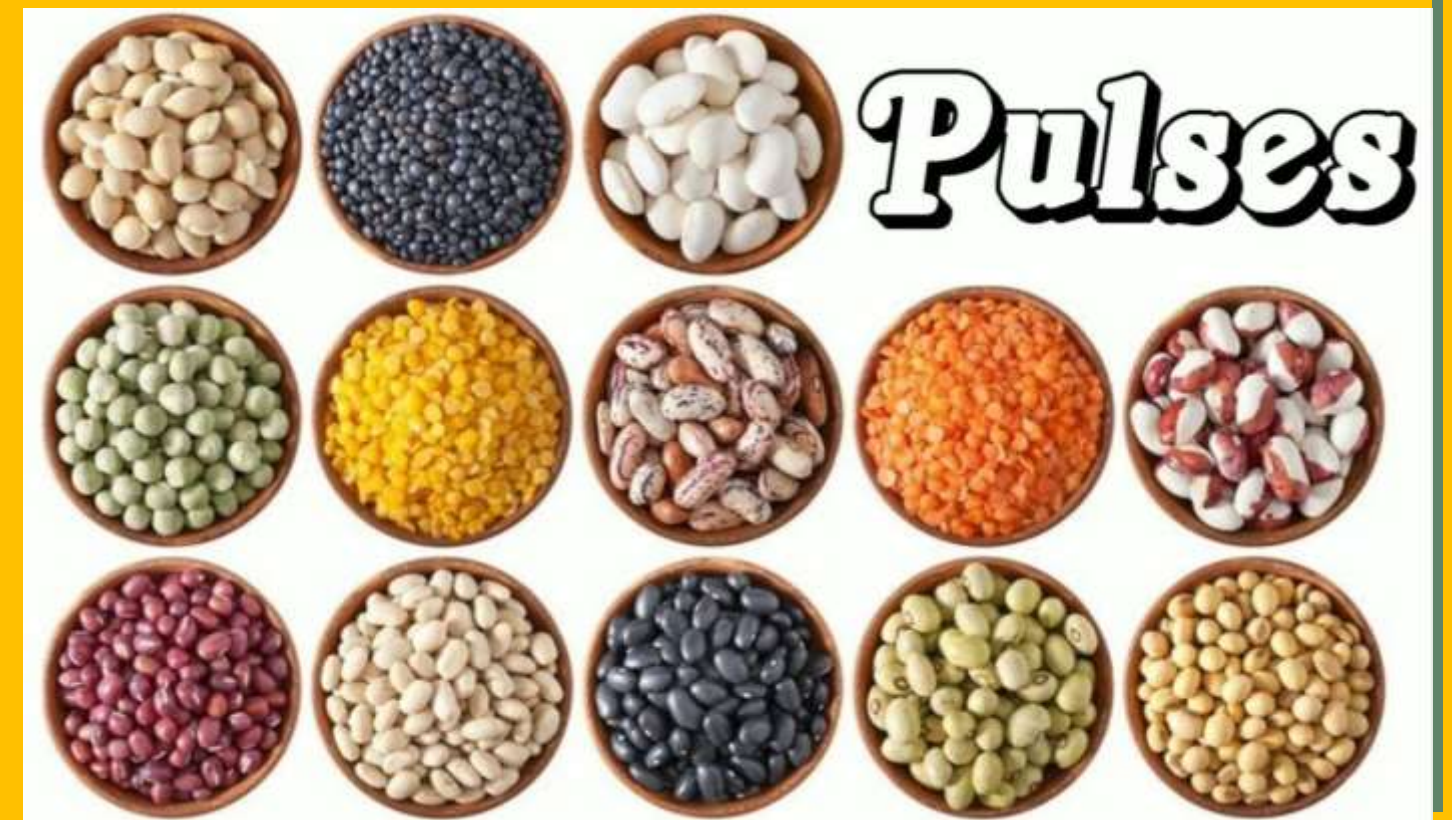
As per the alligation rule,

$$2:3 = (20-x) : (x-15)$$

$$\Rightarrow 2x+3x = 60+30$$

$$\Rightarrow 5x = 90$$

$$\Rightarrow x = 18$$





Lets discuss a case,

A dealer has 1000 kg sugar and he sells a part of it at 8% profit and the rest of it at 18% profit. The overall profit he earns is 14%. What is the quantity which is sold at 18% profit?

As per the rule of alligation,

Quantity of Dearer: Quantity of Cheaper = $(18-14) : (14-8) = 4:6 = 2:3$

Quantity of sugar sold at 18% profit = $\frac{2}{3} \times 1000 = 666\text{kg}$





Lets discuss a case,

How much coffee of variety A, costing Rs. 5 a kg should be added to 20 kg of Type B coffee at Rs. 12 a kg so that the cost of the two coffee variety mixture be worth Rs. 7 a kg?

As per the rule of alligation,

Quantity of Dearer: Quantity of Cheaper = $(12-7) : (7-5) = 5:2$

Quantity of Variety A coffee that needs to be mixed $\Rightarrow 5:2 = x:20$

$\Rightarrow x = 50$ kg





PARTNERSHIP



- IBPS



PARTNERSHIP



- When two or more people joins hands with a common goal to attain profits.
- Every partner invests either time, money or his patents to help partnership firm to reap profits.





Lets discuss a case,



Raj invested Rs 76000 in a business. After few months Monty joined him and invests Rs 57000. At the end of year both of them share the profits at the ratio of 2:1. After how many months Monty joined Raj ?

Solution - We can simply compute per month investment of both partnership

Raj invested Rs 76,000 for 12 months and Monty invested Rs 57,000 for x months.

$$\text{Now } 76000 \times 12 / 57000 \times x = 2 : 1$$

$$\Rightarrow 76 \times 12 / 2 = 57x$$

$$\Rightarrow x = 8$$

So Monty invested his money for 8 months and he joined after 4 months.



Lets discuss a case,



A and B started a business by investing money in ratio of 5:6. C joined them after 6 months by sharing an amount equal to B's share. At the end of year 20% profit was earned which was equal equal to Rs 98,000. How much money was invested by C ?

Solution -

= First of all we will calculate the weighted ratios

$$\Rightarrow A = 5 \times 12 = 60$$

$$\Rightarrow B = 6 \times 12 = 72$$

$$\Rightarrow C = 6 \times 6 = 36$$

Total investment at the end of year = $98000 \times 100/20 = \text{Rs } 4,90,000$

$$\Rightarrow \text{Investment by C} = 490000 \times 36 / 168 \times 2 = \text{Rs } 210000$$



Lets discuss a case,



Sita and Geeta started a business by investing Rs. 120000 and Rs.135000 respectively. Find the share of each out of an annual profit of Rs. 35700.





References



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Thank You

