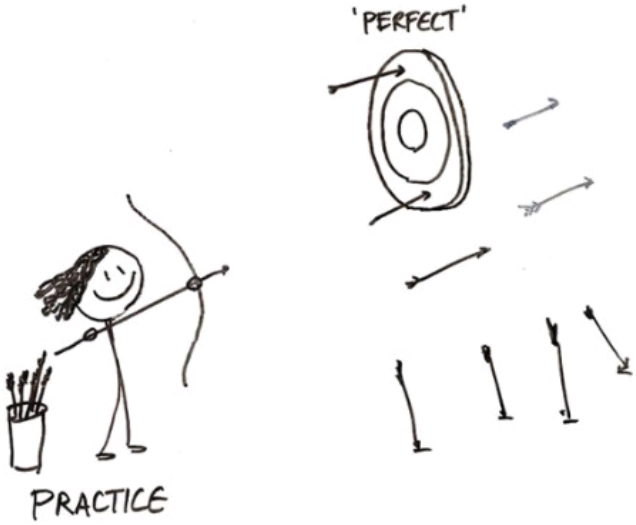
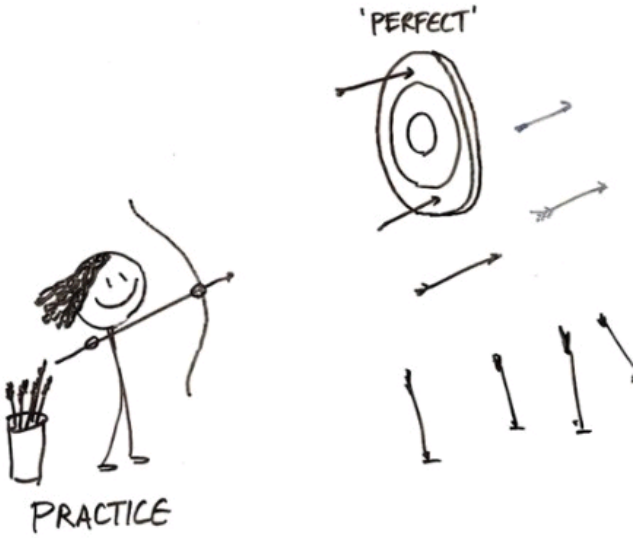
- Practice:
  5. In what ratio must rice costing Rs.8.50 per kg be mixed with rice costing Rs.13 per kg so that the mixture be worth Rs.10 per kg?
  6. A container contains 40 litres of milk. From this container 4 litres of milk was taken out and replaced by water. This process was repeated further two times. How much milk is now contained by the container?
  7. In what ratio must a grocer mix two varieties of pulses costing Rs. 15 and Rs. 20 per kg respectively so as to get a mixture worth Rs. 16.50 kg?
  8. Three persons get money in the ratio 2 : 2 : 5. If the total sum is Rs 133020, What is the maximum share Which one person got?



- Practice:
  1. Three persons A, B and C divide a certain amount of money such that A's share is Rs. 4 less than half of the total amount, B's share is Rs. 8 more than half of what is left and finally C takes the rest which is Rs. 14. Find the total amount they initially had with them?
  2. If A:B = 2:3, B:C = 4:5 and C:D = 6:7, then A:B:C:D is:
  3. Find the mean proportional of the following pairs of numbers 50 and 512.
  4. The salaries A, B, C are in the ratio 2 : 3 : 5. If the increments of 15%, 10% and 20% are allowed respectively in their salaries, then what will be new ratio of their salaries?



Kokila. K.

23/6/25

Ratio, Mixture Alligation

1. A B C

Certain Amount

Let the total amount be 'x'

- A's share is $\frac{1}{2}x - 4$

Remaining amount after A share will be

$$x - \left(\frac{1}{2}x - 4\right) = x - \frac{1}{2}x + 4$$

$$= \frac{1}{2}x + 4$$

- B's share is $\frac{1}{2}$ of Remaining + 8

$$= \frac{1}{2}\left(\frac{1}{2}x + 4\right) + 8$$

$$= \frac{1}{4}x + 2 + 8 = \frac{1}{4}x + 10$$

- Rest left for C is ₹14

$$A + B + C = x$$

$$\left(\frac{1}{2}x - 4\right) + \left(\frac{1}{4}x + 10\right) + 14 = x$$

$$\frac{1}{2}x + \frac{1}{4}x - 4 + 10 + 14 = x$$

$$\frac{3}{4}x + 20 = x$$

$x - \frac{3}{4}x = 20$

$\frac{1}{4}x = 20$

$x = 80$

2. A : B

B : C

$(2:3) \times 4$ lcm $(3,4) = 12$

$(4:5) \times 3$

$\Rightarrow 8 : 12$

$12 : 15$

$\Rightarrow (8 : 12 : 15) \times 2$

A B C

LCM = 30.

$6 : 7 \times 5$.

(C D.)

$\Rightarrow 16 : 24 : 30 : 35$

3. Mean proportional 50 & 512.

$\sqrt{50 \times 512} = \sqrt{25600} = 160$

4. $A : B : C = 2 : 3 : 5$

$A \rightarrow 2 \times \frac{15}{100}$

$B \rightarrow 10 \times \frac{10}{100}$.

$C \rightarrow 20 \times \frac{20}{100}$

$A = 2 \times 1.15 = 2.30$

$B = 3 \times 1.10 = 3.30$

$C = 5 \times 1.20 = 6.00$

New ratio = 2 : 3 : 3 : 6.00

Multiply all by 10 → 23 : 33 : 60

5. ₹8.50/kg

₹13/kg

8.50 13

\ /

₹10

/ \

13 − 10 : 8.50 − 10

3 : 1.50

2 : 1

→ (4 : 2)

6. 4 litre of milk replaced by water.

\ /

40

$$x\left(1-\frac{4}{x}\right)^n \text{ units}$$

$$40\left(1-\frac{4}{40}\right)^3$$

$40(1-0.1)^3$

$1^3 - 3(1)^2(0.1) + 3(1)(0.1)^2 - (0.1)^3$

$1 - 0.3 + 0.03 - 0.001$

$1 - 0.3$ ~~$- 0.031$~~.

$\Rightarrow 0.729$.

$40 \times 0.729 = 29.16$ litres

7. ₹15/kg ₹20/kg

₹16.50 kg

20 − 16.50 : 16.50 − 15

3.50 : 1.50

$\times 2$ 3.5 : 1.5 $\times 2$

7 : 3

8. 2 : 2 : 5 → 9

₹133020

$\frac{133020}{9} = 14780$

Maximum share $\Rightarrow 5 \times 14780 \Rightarrow$ ₹73900