Aptitude-Ratio-And-Proportion

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https://rtpnotes.vercel.app

Reference Playlist

https://youtube.com/playlist?list=PL8p2I9GklV454LdGfDOw0KkNazKuA-6B2&feature=shared

Question 1

Divide Rs 420 among A, B &C in the ratio 1/3:5/6:7/9

- We need to eliminate the denominators here
  - 3, 6 and 9
  - The Lowest common multiple (LCM) here is 18
- Multiplying the ratio with the LCM 18
  - 18/3, 90/6, 126/9 = 6:15:14
  - 6x + 15x + 14x = 420
  - 35x = 420
  - x = 420/35

    - x = 12
- A's Amount = 6 x 12 = 72
- B's Amount = 15 x 12 = 180
- C's Amount = 14 x 12 = 168

Question 2

The no of boys and that of girls in a school is in the ratio 5:3. If 16% of the boys and 20% of the girls are scholarship holders, find the percentage of those who are not scholarship holders

- Let the number of boys and girls be 500 and 300
- Boys
    - Boys with scholarship = 16%
    - Boys without scholarship = 84%
    - No of boys without scholarship = 84% of 500 = 420
- Girls
    - Girls with scholarship = 20%
    - Girls without scholarship = 80%
    - No of girls without scholarship = 80 % of 300 = 240
- Percentage of students without scholarship
    - (420+240)/800 = (660/800) x 100 = 82.5 %

Question 3

A and B are two alloys of gold and copper prepared by mixing metals in the ratio 7:2 and 7:11 respectively. If equal quantities of alloys are melted to form a third alloy C, find the ratio of gold and copper in C

- Let 100 gm of alloy A and 100 gm of alloy B
- Gold in alloy A=7/9×100
- copper in alloy A=2/9×100
- Gold in alloy B=7/18×100

- Copper in alloy B=11/18×100
- Gold in alloy C=700/9+700/18=2100/18
- Copper in alloy C=200/9+1100/18=1500/18
- Ratio of copper and iron in alloy C=2100/18:1500/18
- Answer: 7:5

Question 4

An employer reduces the no of employees in the ratio of 9:8 and increases their wages in the ratio 14:15. In what ratio the wages bill is increased or decreased

- Reduction of employees from 9x to 8x
- Increasing wages from 14y to 15y
- Total bill will be
  - 9x x 14y -> 8x x 15y
  - 126 xy -> 120 xy
- Ratio is 126/120 => 21/20
- Wages bill is reduced to 21/10

Question 5

If x : y = 4 : 3, then (7x - 3y) : (7x + 3y) = ?

- let x = 4 and y = 3
- Subbing the values we get
- 28-9: 28+9 = 19/37
- **Answer: 19/37**

Question 6

A bag contains one-rupee, 50-p and 25-p coins in the ratio 5 : 7 : 12 amounting to Rs. 69. Find the number of coins of each type.

- **Given :**
  - A bag contains one-rupee, 50-p and 25-p coins in the ratio 5 : 7 : 12 amounting to Rs. 69
- **To find :**

  - Number of one-rupee, 50-p and 25-p coins in the bag

  Solution :
- Form the equation to calculate number of one-rupee, 50-p and 25-p coins in the bag
- It is given that the bag contains one-rupee, 50-p and 25-p coins in the ratio 5 : 7 : 12 amounting to Rs. 69
- Step 1
  - Let number of one-rupee, 50-p and 25-p coins in the bag are 5n , 7n , 12n respectively
  - By the given condition
  - $$(1 \times 5n) + (0.50 \times 7n) + (0.25 \times 12n) = 69$$
- Step 2
  - $$(1 \times 5n) + (0.50 \times 7n) + (0.25 \times 12n) = 69$$
    $$\implies 5n + 3.5n + 3n = 69$$
    $$\implies 11.5n = 69$$
    $$\implies n = 6$$
  - Number of 1 rupee coins = $5n = 5 \times 6 = 30$

    Number of 50-p coins = $7n = 7 \times 6 = 42$

    Number of 25-p coins = $12n = 12 \times 6 = 72$

Question 7

A mixture contains alcohol and water in the ratio 4:3. If 5 litres of water is added to the mixture, the ratio becomes 4:5. Find the quantity of alcohol in the given mixture.

- Let us assume that quantity of alcohol =4x and quantity of water=3x
- Now he added 5 litres of water and ratio becomes 4/5
  - 4x/3x+5 = 4/5
  - x/3x+5 = 1/5
  - 5x = 3x+5
  - 2x = 5
  - x =5/2
- x = 5/2
- Quantity of alcohol = 4x = 4 x 5/2 = 10l
- **10 litres**

Question 8

A sum of Rs. 5200 is divided between A, B, C and D such that
A's share / B's share = B's share/C's share = C's share / D's share = 2/3 Find A's share.

- Make a table like this, which shows the ratio

A	B	C	D
2	3		
	2	3	
		2	3

- Empty cells can be filled with the value of the adjacent cell

A	B	C	D
2	3	3	3
2	2	3	3
2	2	2	3

- Multiply the values together to get the total ratio
  - A = 2x 2x 2 = 8
  - B = 3 x 2 x 2 = 12
  - C = 3x3x2 = 18

    - D = 3x3x3 = 27
- A:B:C:D = 8:12:18:27
- 8x+12x+18x+27x = 5200
- x = 80
- **A's Share = 80x8 = 640rs**