

Partnership

- ③ A, B and C entered into a partnership. The ratio of their period of investment are 3:6:2 and that of profits are 9:12:8. Find the ratio in which Investments are made by A, B and C.

Soln:- $C = \frac{P}{T} \Rightarrow \frac{\frac{A}{\frac{9}{3}}}{3} : \frac{\frac{B}{\frac{12}{6}}}{2} : \frac{\frac{C}{\frac{8}{2}}}{4}$

_____ X _____

- ④ A, B and C invest to start a restaurant. The total investment was Rs. 3 lakhs. B invested Rs. 50,000 more than A and C invested Rs. 25,000 less than B. If the Profit at the end of the year was Rs. 14,400 then what is the C's share of the profit (in Rs.)?

Soln:-

$\frac{A}{x}$	$\frac{B}{x+50,000}$	$\frac{C}{x+25,000}$
75,000	125,000	100,000
3	5	4

ATQ, $3x + 75,000 = 300,000$
 $\Rightarrow x + 25,000 = 100,000$
 $\Rightarrow x = 75,000$

12 units	_____	14,400
$\left(\frac{1}{3} \times 12\right)$ units	_____	4,800

Since time period is same, Profit will be distributed according to invest capital.

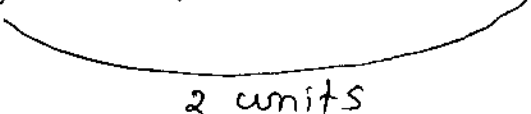
_____ X _____

- ⑤ A, B and C jointly start a business A puts in Rs. 15,000 for 8 months, B puts in Rs. 12,000 for 9 months and C puts in Rs. 8,000 for the whole year. In the end of

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year there is profit of Rs. 10,800. The difference between A's share and C's share in the profit will be:

Soln:-

	<u>A</u>	:	<u>B</u>	:	<u>C</u>
Investment :-	15,000	:	12,000	:	8,000
Time period :-	<u>8</u>	:	<u>9</u>	:	<u>12</u>
Profit :-	15×8	:	12×9	:	8×12
	10	:	9	:	8 = 27 units
					

ATQ, 27 units ————— 10,800
1 unit ————— 400
2 units ————— 800
————— x —————

⑥ A, B & C become partners in a business. A contributes $\frac{1}{3}$ rd of the capital for $\frac{1}{4}$ th of the time. B contributes $\frac{1}{5}$ th of capital for $\frac{1}{6}$ th of the of time & C contributes rest of the Capitals for the whole time. If the profit is Rs. 1820, then the A's share in profit is:

Soln:-

$\frac{1}{3}$ $\frac{1}{5}$

 \ /

 15 $\rightarrow$ Total capital

$$A : B : C$$
$$C \rightarrow 5 : 3 : 7$$
$$T \rightarrow A : B : C$$
$$P \rightarrow 5 \times 3 : 3 \times 2 : 7 \times 2$$

$$5 : 2 : 28$$
$$\begin{array}{r} 35 \text{ units} \\ \downarrow \times \frac{1}{7} \end{array} \quad \begin{array}{r} 1820 \\ \downarrow \times \frac{1}{7} \end{array}$$

5 units ————— 260

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- ⑦ A started business by investing Rs. 5600, B joined the business with Rs. 9,600. If after one year Profit was divided equally between both of them then after how many months B joined business?

Soln:-

$$T = \frac{P}{C} \rightarrow \frac{\frac{A}{1}}{5600} : \frac{\frac{B}{1}}{9600}$$

$$= 9600 : 5600$$

$$\begin{array}{c} 12 : 7 \\ \text{5 units} \end{array}$$

12 units	_____	12 months
5 units	_____	5 months

- ⑧ A started a business by investing Rs. 42,000. After few months B joined by investing Rs. 49,000. If at the end of the year A got Rs. 9,000 and B got Rs. 7,000 as a share of their profit. Then after how many months B joined the business?

Soln:-

$$P \rightarrow 9,000 : 7,000$$

$$9 : 7$$

$$C \rightarrow 42,000 : 49,000$$

$$6 : 7$$

$$T = \frac{P}{C} \rightarrow \frac{9}{6} : \frac{7}{7}$$

$$= 3 : 2$$

$$\begin{array}{c} 3 : 2 \\ \text{1 unit} \end{array}$$

3 units	_____	12 months
1 unit	_____	4 months

- ⑨ A started a business with Rs. 24,000. After 3 months B joined him with Rs. 48,000. After some more months C joined them with Rs. 120,000. B received Rs. 18,000 out of the total annual profit of Rs. 55,000

How many months after started the business did C join?

	<u>A</u>		<u>B</u>		<u>C</u>	
C →	24,000		48,000		120,000	
C →	1	:	2	:	5	
T →	<u>12</u>	:	<u>9</u>	:	<u>n</u>	
P →	12	:	18	:	5n = 30 + 5n	
	↓		↓		↓	
	12,000	+	18,000	+	25,000	= 55,000
	12	:	18	:	25	
	5n = 25 ⇒ n = 5					

After $(12 - 5) = 7$ months, C joined the business.

_____ x _____

- ⑩ A started business investing a certain amount. B joined him after 3 months with a capital of Rs. 48,000. If at the end of the year A and B shared the profit in the ratio of 10:9 respectively, how much money did A invest?

Soln:-

$$C = \frac{P}{T} \Rightarrow \frac{\frac{A}{12}}{\frac{10}{12}} : \frac{\frac{B}{9}}{\frac{9}{9}}$$

$$\begin{array}{ccc} & 5 & : & 6 \\ & \downarrow & & \downarrow \\ 8000 \times & & & \times 8000 \\ & 40,000 & & 48,000 \end{array}$$

- ⑪ A starts business with a capital of Rs. 14,000. Five months later B joins and further two months later C joins them. If the profit sharing ratio in the end of year is 4 : 3 : 2, then the money invested by C was :

Soln:-

$$T \rightarrow \frac{A}{12} : \frac{B}{7} : \frac{C}{5} \quad \left| \quad \begin{array}{ccc} 35 & : & 45 & : & 42 \\ \downarrow \times 400 & & & & \downarrow \times 400 \\ 14,000 & & & & 16,800 \end{array} \right.$$

$$C = \frac{P}{T} \rightarrow \frac{4}{12} : \frac{3}{7} : \frac{2}{5}$$

$$\left(\frac{1}{3} : \frac{3}{7} : \frac{2}{5} \right) \times 105$$

- ⑫ A, B and C are partners in a business. A whose money has been used for 4 months claims $\frac{1}{8}$ of profit, B whose money has been used for 6 months claims $\frac{1}{3}$ of profit. C had invested Rs. 1560 for 8 months. What is the difference between share of A and B?

Soln:-

$\frac{1}{8}$ and $\frac{1}{3}$

24 ← total Profit

$C = \frac{P}{T} \left(\frac{A}{\frac{3}{4}} : \frac{B}{\frac{8}{6}} : \frac{C}{\frac{13}{8}} \right) \times 24$

 $18 : 32 : 39$

Diff = 4

 $\downarrow \times 40$

Rs. 560

$P \rightarrow \frac{A}{3} : \frac{B}{8} : \frac{C}{13}$

- ⑬ X and Y entered into a partnership, Investing Rs. 16,000 and Rs. 12,000 respectively. After 3 months X withdrew Rs. 5,000. while Y invested Rs. 5,000 more. After 3 months more Z joins the business with Capital of Rs. 21,000. After a year they obtained a profit of Rs. 26,400. By what amount does the share of Y exceeds the share of Z.

Soln:-

$$\begin{aligned}
 P &= C \times T \Rightarrow \begin{array}{c} \underline{X} \\ (16000 \times 8 \\ + 11000 \times 3) \end{array} : \begin{array}{c} \underline{Y} \\ (12,000 \times 3 + \\ 17000 \times 3) \end{array} : \begin{array}{c} \underline{Z} \\ (21,000 \times 6) \end{array} \\
 &= (16 + 11 \times 3) : (12 + 17 \times 3) : (21 \times 2) \\
 &= 49 : 63 : 42 \\
 &= 7 : 9 : 6 = 22 \text{ units} \\
 &\quad \quad \quad \swarrow \quad \quad \searrow \\
 &\quad \quad \quad 1200 \quad 3 \text{ units} \quad \quad \quad 1200 \\
 &\quad \quad \quad \text{Rs. 3600} \quad \quad \quad 26,400
 \end{aligned}$$

- ⑭ A, B and C started a business with their Capitals in the ratio 2 : 3 : 5. A increased his capital by 50% after 4 months, B increased his capital by 33% after 6 months and C withdrew 50% of his capital after 8 months, from the start of the business. If the total profit at the end of a year was Rs. 86,800. Then the difference

between the share A and C in the profit was:

Soln:-

<u>A</u>	<u>B</u>	<u>C</u>
$+50\% \left(\begin{array}{c} 200 \times 4 \\ 100 + \\ 300 \times 8 \end{array} \right)$	$\times 33\frac{1}{3} \left(\begin{array}{c} 300 \times 6 \\ +100 \\ 400 \times 6 \end{array} \right)$	$-50\% \left(\begin{array}{c} 500 \times 8 \\ -250 \\ 250 \times 4 \end{array} \right)$
$(800 + 2400)$	$(1800 + 2400)$	$(4000 + 1000)$
3200	4200	5000
16	21	25
$\underbrace{\hspace{10em}}_{9 \text{ units}}$		

ATQ 62 units $\frac{86,800}{1400}$ | $9 \text{ units} = 9 \times 1400 = 12600$

1 unit $\frac{1400}{X}$

- ⑮ A, B and C entered into a business and their investments ratio was 5:4:3. After 4 months B invested Rs. 1000 more and after 8 months C invested Rs. 2000 more. At the end of one year the profit ratio was 15:14:11, then the investment of C at the beginning was:

Soln:-

<u>B</u>	<u>C</u>
$4n \times 12$ $+$ 1000×8	$3n \times 12$ $+$ 2000×4
$P \rightarrow (48n + 8000)$	$P \rightarrow (36n + 8000)$
$\underbrace{\hspace{10em}}_{12n}$	

3 units = 12n
 1 unit = 4n
 11 units = 44n
 $\therefore 44n = 36n + 8000$
 $\Rightarrow 8n = 8000$
 $\Rightarrow n = 1000$
 Investment of C = $3 \times 1000 \times 12 + 2000 \times 4 = 8000$

P $\rightarrow$ $\frac{14}{3 \text{ units}}$ $\frac{11}{3 \text{ units}}$

- (16) A, B and C invested Rs. 25,000, 40,000 and 35,000 in a business. After 4 months they invested extra amount in the ratio 3:2:5. If B's share is $\frac{4}{15}$ of total profit. Find the extra amount invested by B?

Soln:-

<u>A</u>	<u>B</u>	<u>C</u>
$25,000 \times 12^3$	$40,000 \times 12^3$	$35,000 \times 12^3$
$+ 3n \times 8^2$	$+ 2n \times 8^2$	$+ 5n \times 8^2$

$$P \rightarrow (75,000 + 6n) : (120,000 + 4n) : (105,000 + 10n)$$

$$\frac{\text{B's Share}}{\text{Total Profit}} = \frac{120,000 + 4n}{3,00,000 + 20n} = \frac{4}{15}$$

$$\Rightarrow \frac{4(30,000 + n)}{5(60,000 + 4n)} = \frac{4}{15} \Rightarrow 90,000 + 3n = 60,000$$

$$\Rightarrow n = 30,000$$

$$\therefore \text{Extra amount invested by B} = 2n$$

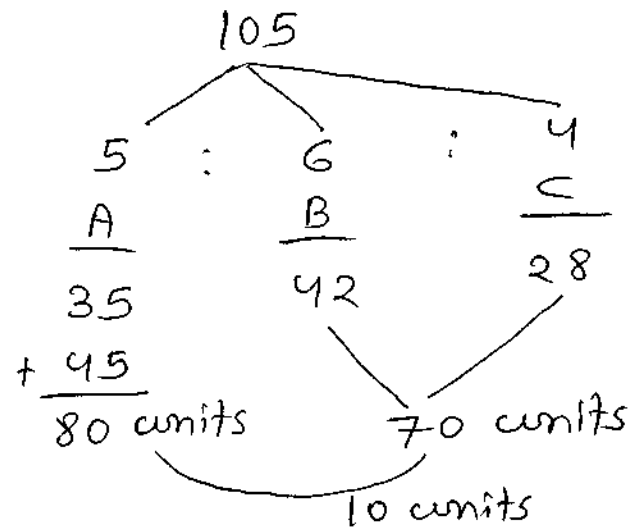
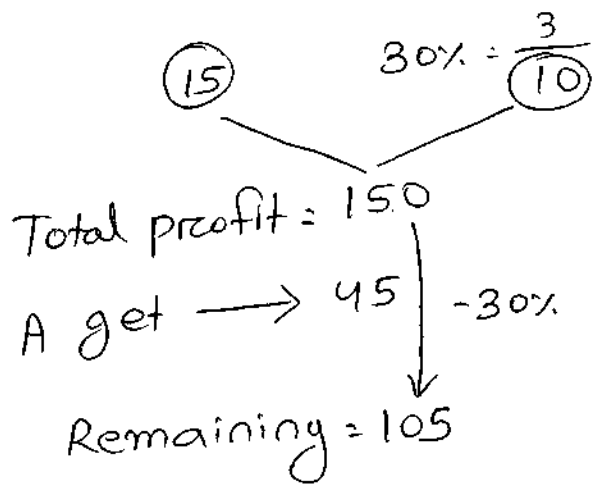
$$= 2 \times 30,000$$

$$= 60,000$$

- (17) A, B & C entered into a partnership by investing the capitals in the ratio 5:6:4. A get 30% of the total profit for managing the business. The remaining profit is divided among them in the ratio of their investments. At the end of a year, the Profit of A was Rs. 20,000 more than the Sum

of the profits of B and C. What was the share of B in the total profit?

Soln:- 5 : 6 : 4



ATQ, 10 units _____ 20,000

1 unit _____ 2,000

B's share 42 units _____ $42 \times 2,000 = 84,000$

- (18) A, B & C started a business with investment in the ratio 3 : 4 : 5. As B and C were working Partners they were paid equal salaries. The ratio of B's and C's total income is 9 : 10. If the total annual profit is Rs. 66,000. Find B's Salary.

Soln:-

<u>A</u>	<u>B</u>	<u>C</u>	
3	4	5	5 units
3	9	10	22 units

ATQ, 22 units _____ Rs. 66,000

1 unit _____ Rs. 3,000

B's Salary 5 units _____ $5 \times 3,000 = \text{Rs. } 15,000$

- (19) A, B and C invest in a business in the ratio 4:5:7. C is a sleeping partner, so his share of profits will be half of what it would have been if he were a working partner. If they make Rs. 36,000 profit of which 25% is reinvested in the business, how much does B get (in Rs)?

Soln:-

	<u>A</u>		<u>B</u>		<u>C</u>
Invest:	4	:	5	:	7
	4	:	5	:	$\frac{7}{2}$ (As C is sleeping partner)
	8	:	10	:	7 = 25 units

Remaining profit after reinvesting = 75% of 36,000

$$= \frac{3}{4} \times 36,000 = 27,000$$

B's share: $\frac{10}{25} \times 27,000 = 10,800$

- (20) A, B and C started business by investing Rs. 24,000, Rs. 32,000 and Rs. 18,000 respectively. A and B are active partners and get 15% and 12% of the total profit and remaining profit is to be distributed among them in the ratio of their investment. If C got total Rs. 65,700 as a profit, what was the total amount of profit?

Soln:- let total profit = 100 units

$$\begin{array}{l} A \rightarrow 15 \\ B \rightarrow 12 \end{array} \left. \vphantom{\begin{array}{l} A \\ B \end{array}} \right\} 27 \text{ units}$$

$$\text{Remaining} = 100 - 27 = 73 \text{ units}$$

<u>A</u>	<u>B</u>	<u>C</u>
Invest: 24,000	32,000	18,000
12	16	9
: 37		

73 units is divided in the ratio of their investment

$$C's \text{ share} = \frac{9}{37} \times 73 \text{ units} = \frac{900}{37} \times 100$$

$$1 \text{ unit} = 3700$$

$$\text{Total profit} = 100 \text{ units} = 100 \times 3700 = 370,000$$

_____ X _____

- ② A and B started a Business in partnership by investing Rs. 10,000 and Rs. 4,000 respectively. Condition of partnership is that B got Rs. 100 per month for management of the business. After paying 5% interest on the capital annual profit has distributed in the ratio of their investments. Find the share of their profit, if the annual profit is Rs. 4000.

Soln:-

<u>A</u>	<u>B</u>
Interest $\rightarrow \frac{10000 \times 5}{100}$	$\frac{4000 \times 5}{100}$

$$12 \times 100$$

1200

for management

$$\begin{array}{r} 1500 \\ \hline 2000 \end{array} \quad \begin{array}{r} 600 \\ \hline 2000 \end{array}$$

∴ Each get Rs. 2,000

$$\begin{aligned} \text{Remaining} &= 4000 - 500 - 200 \\ &\quad - 1200 \\ &= 2100 \end{aligned}$$

Rs. 100 is divided in the ratio of their investment

$$C \rightarrow 10,000 : 4000$$

$$5 : 2 = 7$$

$$\begin{array}{c} 2100 \\ \swarrow \quad \searrow \\ \begin{array}{c} A \\ \hline 5 \\ 1500 \end{array} : \begin{array}{c} B \\ \hline 2 \\ 600 \end{array} \end{array}$$

- (22) A and B started business by investing in the ratio 2 : 3. Both A and B are active partners, so they get Rs. 36,000 and Rs. 30,000 per month respectively as their salary out of the total profit earned. After n months, if the total profit earned is Rs. 7.68 lakhs, and A and B have same income, then find the value of n .

Soln:-

	<u>A</u>	<u>B</u>
Invest:-	$2n$	$3n$
	$+ 36,000$	$30,000$
Profit →	1	1

$$(2n + 36,000) : (3n + 30,000)$$

$$\begin{aligned} \text{ATQ, } 2n + 36,000 &= 3n + 30,000 \\ \Rightarrow n &= 6,000 \\ \therefore 2n + 36,000 &= 2 \times 6,000 + 36,000 \\ &= 48,000 \end{aligned}$$

$$48,000 \times n \text{ months} = \frac{1}{2} \times 768,000$$

- (23) A and B share profits and losses in a firm in the ratio of 3:2. and C entered in this firm as a new partner, his profit sharing ratio is 25%. If C has taken his share of profit from A and B in equal ratio, then the new profit sharing ratio will be:

Soln:-

$\begin{array}{c} 3 : 2 \\ \hline 5 \end{array}$	$25\% = \frac{1}{4}$
$\swarrow \quad \searrow$ Total profit = 20 units	

$\begin{array}{c} 20 \text{ unit} \\ \swarrow \quad \downarrow \quad \searrow \\ \frac{A}{3} \quad \frac{B}{2} \quad C \end{array}$		
$\frac{12}{3} : \frac{8}{2}$		5
12	: 8	
-2.5	-2.5	5

Required ratio = $(12 - \frac{5}{2}) : (8 - \frac{5}{2}) : 5$
 $= 19 : 11 : 10$

_____ x _____

- (24) A and B started a Business with their Capital in the ratio 9 : 13 respectively. They agreed to share the profit in the ratio of their Investment. C Joins the business with the condition that A, B and C will share the profit equally. C pays a sum of Rs. 3,08,000 as a premium for goodwill. What will be the share of B in this premium?

Soln:-

<u>A</u>	<u>B</u>	<u>C</u>	<u>A</u>	<u>B</u>	<u>C</u>
9x3	: 13x3		→ 27	39	
			-5	(-17)	
1x22	: 1x22	: 1x22	22	: 22	: 22

ATQ, 22 units ————— 308,000

1 unit ————— 14,000

Share of B = 17 units ————— 23,800

————— x —————

Q5) Keshav, Surjeet and Thomas started a business with investments in the ratio 2 : 3 : 4. The ratio of their period investments is 5 : 6 : 9. Twenty % of the profit was spent on rent and maintenance of the office. Remaining profit was distributed among themselves. If difference in the share of profit of Keshav and Surjeet is Rs. 7,264, then how much is the total profit (in Rs.)?

Soln:-

	<u>Keshav</u>	<u>Surjeet</u>	<u>Thomas</u>
Investment →	2	: 3	: 4
Time →	5	: 3 6	: 9
Profit →	5	: 9	: 18 = 32

20% = $\frac{1}{5} \times 32$

Total profit = 160 units

Remaining = $160 \times 80\%$

= $160 \times \frac{4}{5} = 128$ units

128 units is divided in the ratio of their investment

128

$\frac{K}{5} : \frac{S}{9} : \frac{T}{18} = 32$
 $20 : 36 : 72$
 16 units

ATQ, 16 units ————— Rs. 7264

1 unit ————— 454

Total profit = $160 \times 454 = 72640$