PARTNERSHIP

1. A, B and C enter into partnership. A contributes one-third of the capital while B contributes as much as A and C together contributed. If the profits at the end of the year amounted to Rs.840, what would each receive?

As 'A' contributed one-third of the capital, he will receive profit

$= \text{Rs. } 840 \times \frac{1}{3} = \text{Rs.}280$

Now as B contributes as much as A and C together, let the share of C be Rs. x

Then B gets A's share + C's share $= 280 + x$

$\therefore$ A + B + C get $280 + (280 + x) + x = 840$

$560 + 2x = 840$

$2x = 280$

$x = 140$

B gets : $280 + 140 = 420$

C gets : 140

Profit of A = Rs.280

Profit of B = Rs.420

Profit of C = Rs.140

2. A and B enter into a partnership, A contributing Rs. 8000 and B contributing Rs.10,000. At the end of six months they introduce C, who contributes Rs. 6,000. After the lapse of 3 years, they find that the firm has made a profit of Rs. 9,660. Find the share of each.

A's profit on a capital of Rs. 8000 for 3 years

(i.e.) A's profit on Rs. 24000 for one year

B's profit on a capital of Rs.10000 for 3 years

(i.e.) B's profit on Rs.30000 for one year

C's profit on a capital of Rs. 6000 for 2½ years

(i.e.) C's profit on Rs. 15000 for 1 year

A : B : C = 24000 : 30000 : 15000

= 8 : 10 : 5 (sum of the ratios 23)

$\therefore$ A's share of profit $= 9660 \times \frac{8}{23} = \text{Rs. } 3,360$

B's share of profit $= 9660 \times \frac{10}{23} = \text{Rs. } 4,200$

C's share of profit $= 9660 \times \frac{5}{23} = \text{Rs. } 2,100$

3. **A and B enter into partnership. A supplies whole of the capital amounting to Rs. 45,000 with the conditions that the profits are to be equally divided and that B pays A interest on half the capital of 10% p.a., but receives Rs. 120 p.m. for carrying on the concern. Find their total yearly profit, when B's income is one half of A's income.**

B pays A interest on half the capital $\left(\text{(i.e.) Rs. } 45{,}000 \times \frac{1}{2}\right)$ Rs. 22,500 @ 10% p.a.

So, B pays A $= 22{,}500 \times \frac{10}{100} =$ Rs. 2,250 p.a.

B receives for carrying on the concern
= Rs. 120 × 12 months = Rs. 1440 p.a.
Let the total profit after B's salary be Rs. x
[Ratio of A : B = 1 : 1]

$\therefore$ B's income $= \frac{x}{2} - 2250 + 1440$

A's income $= \frac{x}{2} + 2250$

But A's income is twice B's income

$$\therefore \frac{x}{2} + 2250 = 2\left(\frac{x}{2} - 2250 + 1440\right)$$

$$\frac{x + 4500}{2} = \frac{2(x - 4500 + 2880)}{2}$$

$$\frac{x + 4500}{2} = x - 1620$$

$x + 4500 = 2x - 3240$
$2x - x = 4500 + 3240$
$x = 7740$
Total profit for the year = Rs. 7,740 + B's Salary = Rs. 9,180.

4. **R and S are partners sharing profits and losses in the ratio of 2 : 1. They admit T into partnership giving him 1/5th share in profits which he acquires from R and S in the ratio of 1 : 2. Calculate the new profit sharing ratio.**

'T' acquires his share of profit → 1/5 from R and S in the ratio of 1 : 2. This means he gets from

R $= \frac{1}{5} \times \frac{1}{3} = \frac{1}{15}$; from S $= \frac{1}{5} \times \frac{2}{3} = \frac{2}{15}$;

$\therefore$ T $= \frac{1}{15} + \frac{2}{15} = \frac{3}{15}$

Hence R's share $= \frac{2}{3} - \frac{1}{15} = \frac{10 - 1}{15} = \frac{9}{15}$

S's share $= \frac{1}{3} - \frac{2}{15} = \frac{5 - 2}{15} = \frac{3}{15}$

Thus, the new profit sharing ratio for R, S and T will be $\frac{9}{15} : \frac{3}{15} : \frac{3}{15}$ (or) 3 : 1 : 1

5. **X, Y and Z are partners in hardware business with a profit sharing ratio of 5 : 3 : 2. X and Y decide to continue the business, while Z wanted to retire from the business. On the date of Z's retirement their respective capitals are Rs. 38,000, Rs. 24,000 after making all adjustments. They decide to be equal partners in the future and maintain the total capital at Rs. 70,000 which will be in the profit sharing ratio. Partners are expected to bring in additional cash in case of deficiency and withdraw in case of surplus. Show how the capitals of X and Y will be adjusted in the new firm.**

Total capital of new firm = Rs. 70,000
Since X and Y are equal partners they will maintain Rs. 35,000 each as capital.

'X' – Required Capital	= Rs. 35,000
Existing Balance	= Rs. 38,000
'X' will withdraw the excess of	Rs. 3,000
'Y' – Required Capital	= Rs. 35,000
Existing Balance	= Rs. 24,000
To be brought in by 'Y'	Rs. 11,000

'Y' will introduce Rs. 11,000 to make good the deficiency.

6. **A, B & C started a business with Rs. 25,000, Rs. 16,000 and Rs. 12,000 capitals respectively. After 5 months, A withdrew Rs. 5,000 from his capital. Three months later B and C added Rs. 7,000 and Rs. 14,000 to their capitals respectively. Find the share of each in the annual profit of Rs. 6,850.**

A's capital is Rs. 25,000 for 5 months and Rs. 20,000 for 7 months
B's capital is Rs. 16,000 for 8 months and Rs. 23,000 for 4 months
C's capital is Rs. 12,000 for 8 months and Rs. 26,000 for 4 months.

These are equivalent to monthly investments as follows :

A's capital

= Rs. 25,000 × 5 + Rs. 20,000 × 7

= Rs. 2,65,000

B's capital

= Rs. 16,000 × 8 + Rs. 23,000 × 4

= Rs. 2,20,000

C's capital = Rs. 12,000 × 8 + Rs. 26,000 × 4 = Rs. 2,00,000

Total capital (A+B+C) = Rs. 6,85,000

Profit = Rs. 6,850

Ratio of A : B : C = 265 : 220 : 200

A's share in profit = 6850 × 265/685

= Rs. 2,650

B's share in profit = 6850 × 220/685

= Rs. 2,200

C's share in profit = 6850 × 200/685

= Rs. 2,000

7. **Three persons A, B and C enter into partnership. A contributes Rs. 840, B - Rs. 1600 and C - Rs. 1560 respectively. 'A' acts as manager, for which he receives one tenth of the profits and the remainder of the profits is divided among all the three partners in proportion to the contributions. What fractional part of the whole profits does each receive?**

A : B : C = 840 : 1600 : 1560 = 21 : 40 : 39

Suppose the total annual profit be Rs. 1

Then A, as manager, gets = Rs. $\frac{1}{10}$

Remaining profit = $1 - \frac{1}{10} = \frac{9}{10}$

∴ A's share in the remaining profit

$= \frac{9}{10} \times \frac{21}{100} = \frac{189}{1000}$

∴ A's net income

$= \frac{1}{10} + \frac{189}{1000} = \frac{289}{1000}$

B's share in the profit

$= \frac{9}{10} \times \frac{40}{100} = \frac{360}{1000}$

C's share in the profit

$= \frac{9}{10} \times \frac{39}{100} = \frac{351}{1000}$

Fractions of their incomes are respectively

$\frac{289}{1000}, \frac{360}{1000}, \frac{351}{1000}$

8. **A, B, C purchase a farm for Rs. 10,000 of which A pays Rs. 4,000. They sell it so as to gain a certain sum, of which B gets Rs.275 and C Rs.175. Find A's share in the profit.**

A, B, C together pay Rs.10,000 for the farm.

∴ B and C together pay Rs.6,000 (10,000 – 4000)

∴ Profits of B and C = Rs. 275 + Rs. 175 = Rs. 450

With a capital of Rs.6000, B & C get a profit of Rs.450

∴ A contributes Rs.4000 and will get a profit

of $= \frac{4000}{6000} \times 450$ = Rs. 300.

9. **A, B and C agree to receive profits from their business, each in proportion to his investment. A and B put back into the business their shares of the profit each year but 'C' does not. Initially 'A' invests Rs.5,000, B - Rs.10,000 and C - Rs. 30,000. If the profit for the first year is Rs.9,000 and for second year is Rs. 10,000, calculate the amount of money each has in the business during the third year.**

Ratio of the capitals (and the profits) during first year =5000 : 10000 : 30000 = 1 : 2 : 6

A's share in the first year profit

$= 9000 \times \frac{1}{9}$ = Rs. 1000

B's share in the first year profit

$= 9000 \times \frac{2}{9}$ = Rs. 2000

∴ A, B, C's second year capital are (Rs.5000 + 1000), (Rs.10000 + 2000), and Rs.30,000

Ratio of profits (during 2nd year)

= 6000 : 12000 : 30000 *(i.e.)* 1 : 2 : 5

∴ A's share in the 2nd year profit

$= 10000 \times \frac{1}{8}$ = Rs. 1250

B's share in the 2nd year profit

$= \frac{2}{8} \times 10000$ = Rs. 2500

∴ In the beginning of the 3rd year, their respective investments are

(Rs. 6000 + 1250), (Rs. 12000 + 2500) and Rs. 30000

i.e. Rs. 7250, Rs. 14500 and Rs. 30000

10. A, B and C partners in a business, agree to receive profit from business, each in proportion to his investment. At the end of the year, A gets 1/3, B gets 1/4 of the profits. If the capital of A be Rs. 1000 more than that of B, find the amount invested by each.

A and B together $= \left(\frac{1}{3}+\frac{1}{4}\right)$ of the profits

$= \text{i.e. } \frac{7}{12}$ of the profits

$\therefore$ C's profit $= 1 - \frac{7}{12} = \frac{5}{12}$

Difference between the profits of A and B

$= \frac{1}{3} - \frac{1}{4} = \frac{4-3}{12} = \frac{1}{12}$

This 1/12 represents a difference of Rs. 1000 (in investments)

∴ Total investment = Rs. 12000

$\therefore$ A's investment $= \frac{1}{3} \times 12000 =$ Rs. 4000

B's investment $= \frac{1}{4} \times 12000 =$ Rs. 3000

C's investment $= \frac{5}{12} \times 12000 =$ Rs. 5000

11. A, B, C entered into partnership and provided capitals of Rs. 1,100, Rs. 1,300 and Rs. 1,700 respectively. Some months later Rs. 500 extra capital was needed and it was supplied by B. At the end of 12 months total profit was Rs. 2,527 and A's share thereof Rs. 627. When did B supply the extra capital?

∴ A : B : C (in original investments) 1100 : 1300 : 1700 = 11 : 13 : 17

A's profit = Rs. 627

∴ B's profit, with reference to original investment

$= 627 \times \frac{13}{11} =$ Rs. 741

C's profit $= 627 \times \frac{17}{11} =$ Rs. 969

∴ A, B, C together gain

= Rs. 627 + 741 + 969 = Rs. 2337

∴ B's extra income

= Rs. 2527 – 2337 = Rs. 190

Let B's 2nd investment be in the business for x months.

Monthly equivalent principal for B's first investment = 1300 × 12 = Rs. 15,600

Monthly eqivalent principal for B's 2nd investment = 500 × x = Rs. 500x

Ratio of profits (w.r.t B's first and 2nd investment) = 741 : 190

∴ 15600 : 500 x = 741 : 190

∴ 500x × 741 = 15600 × 190

$x = \frac{15600 \times 190}{500 \times 741} = 8$ months

∴ B supplied the extra capital after (12–8) 4 months from the start.

12. X, Y and Z are partners in a firm sharing profits and losses in the ratio of 3 : 2 : 1, subject to the following:

(a) Z's share of profit is guaranteed to be not less than Rs. 12,000 p.a.

(b) Any excess amount to be paid to Z [*i.e.* the difference between the minimum guaranteed and his share of profit] is to be borne by Y.

The profit for the year ending 31st March, 1989 amounts to Rs. 60,000. Show the distribution of profit.

Total profit = Rs. 60,000

X's share of profit

$= \text{Rs. } 60000 \times \frac{3}{6} = \text{Rs. } 30,000$

Y's share of profit

$= \text{Rs. } 60000 \times \frac{2}{6} = \text{Rs. } 20,000$

Less : Excess payable to Z = Rs. 2,000

Rs. 18,000

Z's share of profit

$= \text{Rs. } 60000 \times \frac{1}{6} = \text{Rs. } 10,000$

Add : Difference payable by Y = Rs. 2,000

Rs. 12,000

Share in profit to X = Rs. 30,000
Share in profit to Y = Rs. 18,000
Share in profit to Z = Rs. 12,000

13. **Ajay and Vijay are equal partners with capitals of Rs. 60,000 and Rs. 20,000 respectively on 1st April, 1988. The profit (before adjusting interest on capital and salary) for the year ended 31st March, 1989 was Rs. 24,000. Interest on capitals is to be allowed at 16% p.a. Ajay is entitled to a salary of Rs. 6,000 p.a. The drawings of Ajay and Vijay were Rs. 6,000 and Rs. 4,000 respectively, the interest thereon for Ajay being Rs. 200 and for Vijay Rs. 100. Show how the profits will be divided among Ajay and Vijay and also show the capital balances as on 31st March 1989.**

Profit for the year 1989 before adjustments = Rs. 24,000

Less : Interest on Capital @ 16% p.a.

Ajay $= 60000 \times \frac{16}{100} = \text{Rs. } 9,600$

Vijay $= 20000 \times \frac{16}{100} = \text{Rs. } 3,200$

Salary to 'Ajay' = Rs. 6,000

Rs. 18,800

Rs. 5,200

Add : Interest on
Drawings Ajay = Rs. 200
Vijay = Rs. 100

Rs. 300

∴ Profit for distribution Rs. 5,500

Ajay's share in profit

$= 5500 \times \frac{1}{2} = \text{Rs. } 2,750$

Vijay's share in profit

$= 5500 \times \frac{1}{2} = \text{Rs. } 2,750$

	Ajay (Rs.)	Vijay (Rs.)
Capital balance as on 1.4.88	60,000	20,000
Add : Interest on Capital @ 16% p.a.	9,600	3,200
Salary to Ajay	6,000	—
Share in profit (1:1)	2,750	2,750
	78,350	25,950
Less : Drawings & Interest on Drawings (Ajay 6000 + 200); Vijay (4000 + 100)	6,200	4,100
Capital balance as on 31.03.89	72,150	21,850

14. **A, B and C are partners. 'A' whose money has been in the business for 4 months claims 1/8 of the profits; 'B' whose money has been in the business for 6 months claims 1/3 of the profits. If 'C' had Rs. 1,560 in the business for 8 months, how much money did A and B contribute to the business?**

A and B together gain

$= \frac{1}{8} + \frac{1}{3} = \frac{11}{24}$ of the profits

∴ C's profit

$= 1 - \frac{11}{24} = \frac{13}{24}$

∴ A : B : C (profits)

$= \frac{1}{8} : \frac{1}{3} : \frac{13}{24}$ (or) 3 : 8 : 13

C's monthly equivalent principal
= 1560 × 8 = Rs. 12,480
∴ A's monthly equivalent principal

$= \frac{12480}{13} \times 3 = \text{Rs. } 2,880$

B's monthly equivalent principal

$= \frac{12480}{13} \times 8 = \text{Rs. } 7,680$

∴ A 's contribution
= Rs. 2880 ÷ 4 = Rs. 720
B's contribution
= Rs. 7680 ÷ 6 = Rs. 1,280

15. **'A' begins a business with Rs. 3,000 as capital, 4 months later B joins him with Rs. 2,500, 3 months later still C joins with Rs. 2,800. Out of the profit at the end of the year, 'A' gets 16% for managing the business and the balance is divided according to their capital. If 'A' gets Rs. 1,036/- on the whole, find the total profit and the profit that each of the other gets.**

A's monthly equivalent capital
$= 3000 \times 12 = \text{Rs. } 36{,}000$
B's monthly equivalent capital
$= 2500 \times 8 = \text{Rs. } 20{,}000$
C's monthly equivalent capital
$= 2800 \times 5 = \text{Rs. } 14{,}000$
$\therefore$ A : B : C (investments)
= 36000 : 20000 : 14,000
18 : 10 : 7 (Total 35)
Let the total profit be x
'A' gets for managing the business

$= 16\% = \frac{16x}{100}$ (or) $\frac{4x}{25}$

Remaining $= x - \frac{4x}{25} = \frac{21x}{25}$

A's share in the remaining

$= \frac{18}{35} \times \frac{21x}{25} = \frac{378x}{875}$

B's share in the remaining

$= \frac{10}{35} \times \frac{21x}{25} = \frac{210x}{875x}$

C's share in the remaining

$= \frac{7}{35} \times \frac{21x}{25} = \frac{147x}{875}$

A's net income

$= \frac{4x}{25} + \frac{378x}{875} = \frac{140x + 378x}{875} = \frac{518x}{875}$

= Rs. 1,036 (according to the question)
$\therefore$ x (Total Profit)

$= \frac{1036 \times 875}{518} = \text{Rs. } 1{,}750$

B's share

$= \frac{1750 \times 210}{875} = \text{Rs. } 420$

C's share

$= \frac{1750 \times 147}{875} = \text{Rs. } 294$

16. **A, B, C rent a pasture for a year. 'A' puts in 500 sheep for the first half of the year, 'B' 750 sheep for the second half and 'C' 400 sheep all the year round. If the feed in the first half of the year is considered to be worth twice as much as in the second half of the year, find what fractional part of the rent each person ought to pay.**

The rent A should pay for first 6 months
$= 500 \times 6 \times 2 = \text{Rs. } 6000$
The rent B should pay for next 6 months
$= 750 \times 6 \times 1 = \text{Rs. } 4500$
The rent C pays for the full year
$= (400 \times 6 \times 2) + (400 \times 6 \times 1)$
$= \text{Rs. } 7200$
Fraction of rent A should pay

$= \frac{6000}{6000 + 4500 + 7200} = \frac{6000}{17700} = \frac{20}{59}$

Fraction of rent B should pay

$= \frac{4500}{17700} = \frac{15}{59}$

Fraction of rent C should pay

$= \frac{7200}{17700} = \frac{24}{59}$

17. **A, B, C are partners. 'A' receives 2/3 of the profits, B and C dividing the remainder equally. A's income is increased by Rs. 400 when the rate of profit rises from 5% to 7%. Find the profit of B.**

A's profit

$= \frac{2}{3}$; Remaining $= 1 - \frac{2}{3} = \frac{1}{3}$

$\therefore$ B and C each get (1:1)

$= \frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$ each

$\therefore$ A : B (in profits)

$= \frac{2}{3} : \frac{1}{6} = \frac{4:1}{6} = 4 : 1$

A : B : C = 4 : 1 : 1
Let A's original profit be Rs. x
Then A's increased profit is Rs. (x+400)
From the problem x :

$$\begin{aligned} (x+400) &= 5 : 7. \\ x : x + 400 &= 5 : 7 \\ 7x &= 5x + 2000 \\ 7x - 5x &= 2000 \\ 2x &= 2000 \\ x &= 1000 \end{aligned}$$

Let B's profit be Rs. y

Then

$$A : B = 4 : 1$$
$$1000 : y = 4 : 1$$
$$4y = 1000$$
$$\therefore y = \frac{1000}{4} = \text{Rs. } 250$$

B's profit is Rs. 250

18. **A and B enter into partnership with unequal sums of money, it being agreed that each is to receive 6% p.a. on his capital, and that any profit remaining after that shall be divided equally. At the end of a year, 'A' receives Rs. 4,630 and B Rs. 3,730 and it is found that B thus gets Rs. 650 more than he would have received if all the profits had been shared in proportion to the capitals invested by each. Find what each man's capital is.**

Since B gets Rs. 650 more than the usual share.

'A' loses Rs. 650 from his usual share.

∴ The usual share of A and B must have been (Rs. 4630 + 650) and (Rs. 3730 – 650)

i.e. Rs. 5280 and Rs. 3080

Let their respective capital be Rs. x and Rs. y

$$\therefore x : y = 5280 : 3080\ (12 : 7)$$
$$i.e.\ x : y = 12 : 7$$
$$7x = 12y \text{ or } x = \frac{12y}{7} \quad .....(1)$$

Also 6% of A's capital

$$= \text{Rs. } \frac{6x}{100}$$

∴ Remaining in his share

$$= \text{Rs. } \left(4630 - \frac{6x}{100}\right)$$

∴ Similarly for B

$$= \text{Rs. } \left(3730 - \frac{6y}{100}\right)$$

From the problem, $4630 - \frac{6x}{100}$

$$= 3730 - \frac{6y}{100}$$

$$4630 - 3730 = \frac{6x}{100} - \frac{6y}{100}$$

$$900 = \frac{6}{100}(x - y)$$

$$i.e.\ 900 \times \frac{100}{6} = x - y$$

$$\therefore x - y = 15000 \quad .....(2)$$

By substituting (1) in (2) we get

$$\frac{12y}{7} - y = 15000$$

$$\frac{12y - 7y}{7} = 15000$$

$$5y = 15000 \times 7$$

$$y = \frac{15000 \times 7}{5} = 21000$$

Substituting y = 21000 in (2), we get

$$x - 21000 = 15000$$
$$x = 15000 + 21000 = 36000$$

19. **A, B, C are partners in a business with capitals of Rs. 5,000, Rs. 6,000 and Rs. 4,000 respectively. 'A' gets 30% of the profit for managing the business and the balance is divided in proportion to their capitals. At the end of the year, 'A' gets Rs. 200 more than B and C together. Find the total profit and the share of each.**

A : B : C (investments)

= 5000 : 6000 : 4000 (or) 5 : 6 : 4

A, for managing gets

$$= 30\% = \frac{30}{100} \text{ (or) } \frac{3}{10} \text{ of the profits.}$$

∴ Remaining profit

$$= 1 - \frac{3}{10} = \frac{7}{10}$$

A's share in the remaining profit

$$= \frac{5}{15} \times \frac{7}{10} = \frac{7}{30}$$

$$\therefore \text{Totally 'A' gets} = \frac{3}{10} + \frac{7}{30} = \frac{8}{15}$$

$$\text{B and C together get} = 1 - \frac{8}{15} = \frac{7}{15}$$

∴ Difference in 'A' on the one hand and B and C together on the other

$$= \frac{8}{15} - \frac{7}{15} = \frac{1}{15}$$

This $\frac{1}{15}$ represents an actual difference of Rs. 200

$\therefore$ Total profits $= 200 \times \frac{15}{1} =$ Rs. 3,000

A's share $= \frac{8}{15} \times 3000 =$ Rs. 1,600

(B : C = 6 : 4)

B's share $= \frac{6}{6+4}$ of the remaining money

$= \frac{6}{10} \times 1400 =$ Rs. 840

C's share $= \frac{4}{10} \times 1400 =$ Rs. 560

20. A, B, C enter into partnership and decide to contribute to the total capital of Rs.12,000 in the following manner. 'A' will contribute 25% of the capital. B's contribution will be 80% of C's contribution or 50% of the contribution of 'A' and 'C' together. What amount will each contribute towards the capital?

A's investment $= 25\% = \frac{1}{4}$

Remaining investment $= 1 - \frac{1}{4} = \frac{3}{4}$

Let C's investment be x

Then B's is 80% of x *i.e.* $\frac{80x}{100}$ (or) $\frac{4x}{5}$

Also B's is = 50% of A and C together

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

from the problem, $\frac{1}{8}+\frac{1}{2}x = \frac{4}{5}x$

i.e. $\frac{1}{8} = \frac{4}{5}x-\frac{1}{2}x$

$\frac{1}{8} = \frac{3}{10}x$

$\therefore$ C's share $= x = \frac{1}{8}\times\frac{10}{3} = \frac{5}{12}$

$\therefore$ B's share $= \frac{3}{4}-\frac{5}{12} = \frac{9-5}{12} = \frac{4}{12}$

$\therefore$ A : B : C $= \frac{1}{4} : \frac{4}{12} : \frac{5}{12} = 3 : 4 : 5$

$\therefore$ A's investment $= 12{,}000 \times \frac{3}{12} =$ Rs. 3,000

$\therefore$ B's investment $= 12{,}000 \times \frac{4}{12} =$ Rs. 4,000

$\therefore$ C's investment $= 12{,}000 \times \frac{5}{12} =$ Rs. 5,000

21. A and B start a business, A contributing Rs.6200 and B Rs.9100. Out of the profits A is to receive 15% for looking after the business, 10% is to be kept as reserve and the balance is to be divided in proportion to their capitals. If at the end of one year B receives Rs.4550 as his share of profits, find the sum received by A.

A : B (investments)

= 6200 : 9100 = 62 : 91

A's salary for looking after business

$= 15\% = \frac{15}{100}$ *(i.e)* $\frac{3}{20}$

Reserve = 10%

$\therefore$ Remaining

$= (100 - (15 + 10))\% = 75\% = \frac{3}{4}$

$\therefore$ A's share in the remaining profit

$= \frac{3}{4}\times\frac{62}{153} = \frac{31}{102}$

$\therefore$ B's share in the remaining profit

$= \frac{3}{4}\times\frac{91}{153} = \frac{91}{204}$

$\therefore$ A's net income

$= \frac{3}{20}+\frac{31}{102} = \frac{153+310}{1020} = \frac{463}{1020}$

But $\frac{91}{204}$ actually represents Rs.4,550

$\therefore$ $\frac{463}{1020}$ will actually represent

$= \text{Rs. } 4550 \times \frac{204}{91}\times\frac{463}{1020}$

Sum received by 'A'

= Rs. 4,630

22. **A man starts a business with a capital of Rs.90,000 and employs an assistant. From the yearly profits he keeps an amount equal to 4½ % of his capital and pays his assistant 35% of the remainder of the profits. Find how much the assistant receives in a year in which the profits are Rs.30,000.**

4½% of the investment

$= \frac{4½}{100} = 90000 \times \frac{4½}{100} = Rs.4050$

Profit excluding reserve

= Rs.30000 – 4050 = Rs.25,950

$= \frac{35}{100} \times 25950 = Rs.\ 9082.50$

23. **Two partners invest Rs.12,500 and Rs.8,500 respectively in their business and arrange that 60% of the profits should be divided equally between them and the remaining profits treated as interest on the capital. If one partner's share is Rs.300 more than that of the other, find the whole amount of the profits.**

Ratio of investments

= 12500 : 8500 = 25 : 17

Equal distribution of share = 30% to each

$= \frac{3}{10}$ to each

Remaining share

= 40% [100 – (30 + 30)]%

This is to be divided in the ratio

= 25 : 17

∴ One partner's share

$= \frac{25}{42} \times \frac{40}{100} = \frac{5}{21}$

The other partner's share

$= \frac{17}{42} \times \frac{40}{100} = \frac{17}{105}$

∴ They receive $\left(\frac{3}{10} + \frac{5}{21}\right)$ and $\left(\frac{3}{10} + \frac{17}{105}\right)$

i.e. $\frac{113}{210}$ and $\frac{97}{210}$

∴ Difference in their income

$= \frac{113}{210} - \frac{97}{210} = \frac{16}{210}$ (or) $\frac{8}{105}$

This $\frac{8}{105}$ actually represents Rs. 300

∴ Whole amount of profits

$= 300 \times \frac{105}{8} = Rs.\ 3,937.50$

24. **Three partners in trade contribute respectively Rs.4380, Rs.2920 and Rs.7300 with the agreement that each was to receive 5% on their respective investments and that the remainder of the gains of the firm, if any, was to be divided among them in proportion of the sums originally advanced. The whole gain of the firm was Rs.2000. What was each man's share?**

5% of A's investment

$= 4380 \times \frac{5}{100} = Rs.\ 219$

5% of B's investment

$= 2920 \times \frac{5}{100} = Rs.\ 146$

5% of C's investment

$= 7300 \times \frac{5}{100} = Rs.\ 365$

∴ Total reserve for A, B & C = Rs. 730

∴ Remaining dividend = Rs.2000 – 730

= Rs. 1,270

∴ A : B : C (investments)

= 4380 : 2920 : 7300 (or) 3 : 2 : 5

A's share in the remaining dividend

$= 1270 \times \frac{3}{10} = Rs.\ 381$

B's share in the remaining dividend

$= 1270 \times \frac{2}{10} = Rs.\ 254$

C's share in the remaining dividend

$= 1270 \times \frac{5}{10} = Rs.\ 635$

∴ A's net income

= Rs. 381 + Rs. 219 = Rs. 600

B's net income

= Rs. 254 + Rs. 146 = Rs. 400

C's net income

= Rs. 635 + Rs. 365 = Rs. 1,000