Partnership:

When two or more than two persons run a business jointly, they are called partners and the deal is known as partnership.

Simple partnership:

- A simple partnership is the one in which the capitals of all the partners are invested for the same time.

- In this partnership the gain or loss is distributed among the partners in the ratio of their investments.

- Suppose A and B invest Rs.x and Rs.y respectively for a year in a business, then at the end of the year

(A's share of profit):(B's share of profit)=x:y

Compound Partnership:

- A compound partnership is the one in which the capitals of the partners are invested for different time periods.

- In this partnership the equivalent capitals are calculated for a unit of time by taking (capital *number of units of time).

- Now gain or loss is divided in the ratio of these capitals.

- Suppose A invests Rs.x for p months and B invests Rs.y for q months then

(A's share of profit):(B's share of profit)=xp:yq

Working and sleeping partners:

A partner who manages the business is known as a working partner and the one who simply invests the money is a sleeping partner.

1. A, B and C started a business by investing Rs. 120000,Rs.135000 and Rs. 150000 respectively. Find the share of each out of an annual profit of Rs. 56700.

Total annual profit = 56700

As, the profit ratio is equal to investment ratio,
so; A : B : C = 120000 : 135000 : 150000

A : B : C = 8 : 9 : 10   (and A + B + C = 8 + 9 + 10 = 27)

A's share in profit = (8 x 56700)/27 = 16800

B's share in profit = (9 x 56,700)/27 = 18900

C's share in profit = (10 x 56,700)/27 = 21000

So, profit of A, B and C will be **Rs. 16800, Rs. 18900** and **Rs. 21000** respectively.

2. Alfred started a business investing Rs.45000. After 3 months, Peter joined him with a capital of Rs.60000. After another 6 months, Ronald joined them with a capital of Rs.90000. At the end of the year, they made a profit of Rs.16500. Find the share of each.

Alfred invested his capital for 12 months, Peter for 9 months and Ronald for 3 months.

So, ratio of their capitals = (45000 x 12) : (60000 x 9) : (90000 x 3) = 540000 : 540000 : 270000 = 2 : 2 : 1.

Alfred's share = Rs. (16500 x (2/5)) = Rs. 6600

Peter's share = Rs. (16500 x (2/5)) = Rs. 6600

Ronald's share = Rs. (16500 x (1/5)) = Rs. 3300

3. A, B and C start a business each investing Rs.20000. After 5 months A withdrew Rs. 5000, B withdrew Rs.4000 and C invests Rs.6000 more. At the end of the year, a total profit of Rs. 69900 was recorded. Find the share of each.

Ratio of the capitals of

A, B and C = 20000 x 5 + 15000 x 7 : 20000 x 5 + 16000 x 7 : 20000 x 5 + 26000 x 7

= 205000 : 212000 : 282000 = 205 : 212 : 282.

A's share = Rs. 69900 x (205/699) = Rs. 20500

B's share = Rs. 69900 x (212/699) = Rs. 21200

C's share = Rs. 69900 x (282/699) = Rs. 28200.

4. A , B and C enter into partnership. A invests 3 times as much as B invests and B invests two-thirds of what C invests. At the end of the year, the profit earned is Rs. 6600. What is the share of B?

Let C invest x Rs.

Then according to the question B invest = $\frac{2x}{3}$ Rs.

A invest = $\frac{2x}{3} \times 3 = 2x$ Rs.

Then $x + \frac{2x}{3} + 2x = 6600$

$\Rightarrow 3x + 2x + 6x = 19800$

$\Rightarrow 11x = 19800$

$\Rightarrow x = 1800$

Then B's share = $\frac{2}{3} \times 1800 = 1200$ Rs.

5. A, B and C enter into a partnership with capitals in the ratio 7/2:4/3:6/5. After 4 moths A increases his share of capital by 50%. If at the end of the year the total profit earned is Rs. 21,600, find the share of B in the profit.

Ratio of initial investments = $\left(\dfrac{7}{2} : \dfrac{4}{3} : \dfrac{6}{5} \right)$ = 105 : 40 : 36.

Let the initial investments be 105x , 40x and 36x .

$\therefore$ A : B : C = $\left(105x \times 4 + \dfrac{150}{100} \times 105x \times 8 \right)$: (40x × 12) : (36x × 12)

   = 1680x : 480x : 432x = 35 : 10 : 9.

Hence, B's share = Rs. $\left(21600 \times \dfrac{10}{54} \right)$ = Rs. 4000.

6. A, B and C jointly thought of engaging themselves in a business venture. It was agreed that A would invest Rs. 6500 for 6 months, B, Rs. 8400 for 5 months and C, Rs. 10,000 for 3 months. A wants to be the working member for which, he was to receive 5% of the profits. The profit earned was Rs. 7400. Calculate the share of B in the profit.

For managing, A received = 5% of Rs. 7400 = Rs. 370.

Balance = Rs. (7400 - 370) = Rs. 7030.

Ratio of their investments = (6500 × 6) : (8400 × 5) : (10000 × 3)

= 39000 : 42000 : 30000

= 13 : 14 : 10

$\therefore$ B's share = Rs. $\left(7030 \times \dfrac{14}{37} \right)$ = Rs. 2660.

7. A began a business with Rs. 85,000. He was joined afterwards by B with Rs. 42,500. For how much period does B join, if the profits at the end of the year are divided in the ratio of 3 : 1?

Suppose B joined for x months. Then,

Then, $\left(\dfrac{85000 \times 12}{42500 \times x} = \dfrac{3}{1} \right)$

$\Rightarrow x = \left(\dfrac{85000 \times 12}{42500 \times 3} \right) = 8.$

So, B joined for 8 months.

8. A invested Rs 76000 in a business After few months B joined him with Rs 57000 At the end of the year the total profit was divided between them in the ratio of 2 :1 After how many months did B join?

Assume that B joins for x months . Then:

A : B = 76000*12 : 57000*x = 2:1

76*12 : 57x = 2:1

76*12/57x = 2/1 = 2

x = 76*12/57*2

x = 8

Hence B was there in the business for 8 months, or joined after 12-8 = 4 months.
B joined after 4 months.

9.Four milkmen rented a pasture. A grazed 24 cows for 3 months ; B 10 cows for 5 months; C 35 cows for 4 months and D 21 cows for 3 months. If A's share of rent is Rs. 720, find the total rent of the field.

Soln:

Ratio of shares of A, B, C, D

= (24 x 3) : (10 x 5) : (35 x 4) : (21 x 3) = 72 : 50 : 140 : 63.

Let total rent be Rs. x.

Then, A's share = Rs. (72x)/325

(72x)/325=720

x=(720 x 325)/72 = 3250

Hence, total rent of the field is Rs. 3250.

10. P and Q invested in a business. The profit earned was divided in the ratio 2 : 3. If P invested Rs 40000, the amount invested by Q is

Let the amount invested by Q = q.

$$40000 : q = 2 : 3$$

$$\Rightarrow \frac{40000}{q} = \frac{2}{3}$$

$$\Rightarrow q = 40000 \times \frac{3}{2}$$

$$= Rs.\ 60000$$

11. A, B, C subscribe Rs. 50,000 for a business. A subscribes Rs. 4000 more than B and B Rs. 5000 more than C. Out of a total profit of Rs. 35,000, A receives:

Let C = x .

Then, B = x + 5000 and A = x + 5000 + 4000 = x + 9000.

So, x + x + 5000 + x + 9000 = 50000

$\Rightarrow 3x = 36000$

$\Rightarrow x = 12000$

A : B : C = 21000 : 17000 : 12000 = 21 : 17 : 12.

$\therefore$ A's share = Rs. $\left(35000 \times \dfrac{21}{50} \right)$ = Rs. 14,700.