7 Partnership

Partnership is defined as a relation between two or more persons who have agreed to share the profits of a business carried on by all of them or any of them acting for all. The owners of a partnership business are individually known as the "partners" and collectively as a "firm.

- The minimum number of partners must be two, while the maximum number can be 10 in case of banking business and 20 in all other types of business.

Two brains are better than one may explain why a lot of entrepreneurs and small business owners, create partnerships; a partnership include that:

- two heads (or more) are better than one.
- your business is easy to establish and start-up costs are low.
- more capital is available for the business.
- you'll have greater borrowing capacity high-calibre employees can be made partners.

In a general partnership, the partners manage the company and assume responsibility for the partnership's debts and other obligations. Partnerships come in two varieties: general partnerships and limited partnerships. A limited partnership has both general and limited partners. The general partners own and operate the business and assume liability for the partnership, while the limited partners serve as investors only; they have no control over the company and are not subject to the same liabilities as the general partners. Persons two or more than two persons when start and run the new business jointly of their own choice, the persons start they are called Partners and the deal is done between the partners is known as Partnership.

Ratio of Division of Gains:

- The amount investment of all the partners are for the same time period, the gain or loss amount is distributed among the partners in the ratio of their investments amounts.
  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) = $x : y$
- When investments are for different time periods, then equivalent capital are calculated a unit of time by taking (Capital x number of unit of time).
  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 working partner and the one who simply invests the money is a sleeping partner.

Formula:

I. When investments of A and B are Rs x and Rs y for a year in a business, then at the end of the year (A's share of profit) : (B's share of profit) = $x : y$

II. When A invests Rs x for p months and B invests Rs y for q months, then A's share profit : B's share of profit = $xp : yq$

Example 1. Samir started a software business by investing Rs. 40,000. After six months, Nitish joined him with a capital of Rs. 60,000. After 3 years, they earned a profit of Rs. 27,900. What was Samir's share in the profit?

Solution: Short tricks: Samir : Nitish share of capital

$= (40{,}000 \times 36) : (60{,}000 \times 30)$

$= 1440000 : 1800000 = 4 : 5.$

Samir's share is = **Rs. 27900 *x* 4 / 9 = Rs. 12400.**

Example 2. Anil, Mukesh and Ritesh started a business by investing Rs. 125000 Rs. 150000 and Rs.175000 respectively. Find the share of each, out of an annual profit of Rs. 93,600.

Solution: Ration of share Anil, Mukesh and Ritesh = Ratio of their investment

Anil : Mukesh : Ritesh = 125000 : 150000 : 175000 = 5 : 6 : 7

Anil share = Rs. [93600 × 5/18] = 26000.Mukesh share = Rs. [93600 × 6/18] = 31200.

Ritesh share = Rs. [93600 × 7/18] = 36400.

Example 3. A, B, C enter into a partnership. A contributes Rs. 320000 for 4 months; B contributes Rs. 510000 for 3 months and C contributes Rs. 270000 for 5 months. If the total profit be Rs. 124800, how should they divide it among themselves?

Solution: Ratio of capitals of A, B and C

$= (320000 \times 4) : (510000 \times 3) : (270000 \times 5)$

$= 1280000 : 1530000 : 1350000 = 128 : 153 : 135.$

Sum of ratios $= (128 + 153 + 135) = 416.$

$\therefore$ A's Share = Rs. $\left(124800 \times \frac{128}{416}\right)$ = Rs. 38400;

$\therefore$ B's Share = Rs. $\left(124800 \times \frac{153}{416}\right)$ = Rs.45900;

$\therefore$ C's Share = Rs. $[124800 - (38400 + 45900)]$ = Rs. 40500.

Example 4. Vimla and Surjeet started a shop jointly by investing Rs. 9000 and Rs. 10500 respectively. After 4 months Jaya joined them by investing Rs.12500 while Surjeet withdrew Rs. 2000. At the end of the year there was a profit of Rs. 4770. Find the share of each.

Solution: Clearly Vimla invested Rs. 9000 for 12 months; Surjeet invested Rs. 10500 for 4 months and Rs. 8500 for 8 months; Jaya invested Rs. 12500 for 8 months.

$\therefore$ Ratio of capitals of Vimla, Surjeet and Jaya

$= (9000\times12) : (10500\times4 + 8500\times8) : (12500\times8)$

$= 108000 : 110000 : 100000$

$= 108 : 110 : 100 = 54 : 55 : 50.$

Sum of ratios $= (54 + 55 + 50) = 159.$

$\therefore$ Vimla's share $\text{Rs.}(3000\times4 + 4000\times8) = \text{Rs.}44000.$

Surjeet's share $= \text{Rs.}\left(4770\times\frac{55}{159}\right) = \text{Rs.}1650.$

Jaya's share $= \text{Rs.}[4770 - (1620 + 1650)] = \text{Rs.}1500.$

Example 5. A,B, and C enter into a partnership, A putting Rs. 2000 for the whole year, B putting Rs. 3000 at first and increasing it to Rs. 4000 at the end of 4 months, whilst C puts in at first Rs. 4000 but withdraws Rs. 1000 at the end of 9 months. How should they, at the end of a year, divide a profit of Rs. 8475?

Solution: Calculating equivalent capital For 1 month for each:

A's capital $= (2000\times12) = \text{Rs. } 24000.$

B's capital $= \text{Rs}\left(\frac{8475\times45}{113}\right) = Rs.3375.$

C's capital $= \text{Rs.}(4000\times9 + 3000\times3) = \text{Rs.}45000.$

Ratio of capitals $= 24000 : 44000 : 45000 = 24 : 44 : 45$

Sum of ratios $= 24 + 44 + 45 = 113.$

A's share $6\frac{1}{4}\%$

B's share $= \text{Rs}\left(\frac{8475\times44}{113}\right) = \text{Rs.}3300.$

C's share $= \text{Rs}\left(\frac{8475\times45}{113}\right) = \text{Rs.}3375.$

Multiple Choice Questions

1. Shekhar started a business investing Rs. 25,000 in 1999. In 2000, he invested an additional amount of Rs. 10,000 and Rajeev joined him with an amount of Rs. 35,000. In 2001, Shekhar invested another additional amount of Rs. 10,000 and Jatin joined them with an amount of Rs. 35,000. What will be Rajeev's share in the profit of Rs. 1,50,000 earned at the end of 3 years from the start of the business in 1999 ?

a. Rs. 45,000 **b.** Rs. 50,000
c. Rs. 70,000 **d.** Rs. 75,000

2. Three partners A, B, C start a business. Twice A's capital is equal to thrice B's capital and B's capital is four times C's capital. Out of a total profit of Rs. 16,500 at the end of the year, B's share is:

a. Rs. 4000 **b.** Rs. 8000
c. Rs. 7500 **d.** Rs. 6000

3. A, B and C rent a pasture. A puts 10 oxen for 7 months, B puts 12 oxen for 5 months and C puts 15 oxen for 3 months for grazing. If the rent of the pasture is Rs. 175, how much must C pay as his share of rent?

a. Rs. 45 **b.** Rs. 50 **c.** Rs. 55 **d.** Rs. 60

4. A, B, C started a business with their investments in the ratio 1 : 3 : 5. After 4 months, A invested the same amount as before and B as well as C withdrew half of their investments. The ratio of their profits at the end of the year is:

a. 4 : 3 : 5 **b.** 5 : 6 : 10
c. 6 : 5 : 10 **d.** 10 : 5 : 6

5. In a partnership, A invests $\frac{1}{6}$ of the capital for $\frac{1}{6}$ of the time, B invests $\frac{1}{3}$ of the capital for $\frac{1}{3}$ of the time and C, the rest of the capital for the whole time. Out of a profit of Rs. 4600, B's share is:

a. Rs. 650 **b.** Rs. 800
c. Rs. 960 **d.** Rs. 1000

6. A and B start a business jointly. A invests Rs. 16,000 for 8 months and remains B in the business for 4 months. Out of total profit, B claims $\frac{2}{7}$ of the profit. How much money was contributed by B?

a. Rs. 10,500 **b.** Rs. 11,900
c. Rs. 12,800 **d.** Rs. 13,600

7. Two friends P and Q started a business investing in the ratio of 5 : 6. R joined them after six months investing as amount equal to that of Q's. At the end of the year, 20% profit was earned which was equal to Rs. 98,000. What was the amount invested by R?

a. Rs. 1,05,000 **b.** Rs. 1,75,000
c. Rs. 2,10,000 **d.** Data inadequate

8. A started a business investing Rs. 35,000. After six months B joined him with a capital of Rs. 60,000. At the end of the year the total profit was Rs. 26,000. What will be the difference between the share of profits

a. Rs. 4,000 **b.** Rs. 2,000
c. Rs. 1,500 **d.** Rs. 40,000

9. A's capital is equal to thrice B's capital and B's capital is 4 times C's capital. The ratio of the capitals is:

a. 1 : 3 : 12 **b.** 12 : 4 : 1

c. 3 : 1 : 4 **d.** 1 : 3 : 4

10. A, B, C can do a work in 20, 25 and 30 days respectively. They undertook to finish the work together for Rs. 2220, then the share of A exceeds that of B by:

a. Rs. 120 **b.** Rs. 180

c. Rs. 300 **d.** Rs. 600

11. A starts a business with Rs. 2,000. B joins him after 3 months with Rs. 4,000. C puts a sum of Rs. 10,000 in the business for 2 months only. At the end of the year, the business gave a profit of Rs. 5600. How should the profit be divided among them?

a. Rs. 1300 **b.** Rs. 1400

c. Rs. 1500 **d.** Rs. 1600

12. A and B enter into a partnership for a year. A contributes Rs. 1500 and B Rs. 2000. After 4 months they admit C, who contributes Rs. 2250. If B withdraws his contribution after 9 months, how would they share a profit of Rs. 900 at the end of the year?

a. Rs. 100 **b.** Rs. 200 **c.** Rs. 300 **d.** Rs. 400

13. A began a business with Rs. 450 and was joined afterwards by B with Rs. 300. When did B join if the profits at the end of the year were divided in the ratio 2 : 1?

a. 0 months **b.** 1 months

c. 2 months **d.** 3 months

14. A and B enter into a partnership with their capitals in the ratio 7 : 9. At the end of 8 months. A withdraws his capital. If they receive the profits in the ratio 8 : 9, find how long B's capital was used.

a. 7 months **b.** 9 months

c. 11 months **d.** 13 months

15. A, B and C invested capitals in the ratio 2 : 3 : 5; the timing of their investments being in the ratio 4 : 5 : 6. In what ratio would their profit be distributed?

a. 4 : 7 : 15 **b.** 8 : 15 : 30

c. 5 : 7 : 12 **d.** 3 : 5 : 11

16. A, B and C invested capitals in the ratio 5 : 6 : 8. At the end of the business term, they received the profits in the ratio 5 : 3 : 12. Find the ratio of time for which they contributed their capitals?

a. 3 : 1 : 2 **b.** 5 : 2 : 7

c. 0 : 2 : 3 **d.** 2 : 1 : 3

17. A, B and C are partners. A receives $\frac{2}{5}$ of the profit and B and C share the remaining profit equally. A's income is increased by Rs. 220 when the profit rises from 8% to 10%. Find the capitals invested by A, B and C.

a. Rs. 8250 **b.** Rs. 8450

c. Rs. 8650 **d.** Rs. 8850

18. Two partners invest Rs. 125,000 and Rs. 85,000 respectively in business and agree that 60% of the profit should be divided equally between them and the remaining profit is to be treated as interest on capital. If one partner gets Rs. 300 more than the other, find the total profit made in the business.

a. Rs. 3497.50 **b.** Rs. 3350.50

c. Rs. 3688.50 **d.** Rs. 3937.50

19. A and B invested in the ratio 3 : 2 in a business. If 5% of the total profit goes to charity and A's share is Rs. 855, find the total profit.

a. Rs. 1500 **b.** Rs. 1600

c. Rs. 1700 **d.** Rs. 1800

20. In a partnership, A invested $\frac{1}{6}$ th of the capital for $\frac{1}{6}$ th of the time, B invested $\frac{1}{3}$ rd of the capital for $\frac{1}{3}$ rd of the time, and C invested the rest of the capital for the whole period. At the end of the period, they earned a profit of Rs. 4600. Find the share of B.

a. Rs. 200 **b.** Rs. 400

c. Rs. 800 **d.** Rs. 1000

ANSWERS

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
b	d	a	b	b	c	c	b	b	b
11.	**12.**	**13.**	**14.**	**15.**	**16.**	**17.**	**18.**	**19.**	**20.**
b	c	d	a	b	d	a	d	a	c

SOLUTIONS

1. **(b)** Shekhar : Rajeev : Jatin

$= (25000 \times 12 + 35000 \times 12 + 45000 \times 12) :$

$(35000 \times 24) : (35000 \times 12)$

$= 1260000 : 840000 : 420000 = 3 : 2 : 1$

Rajeev's share = Rs. $\left(150000 \times \frac{2}{6}\right)$ = Rs. 50000.

2. **(d)** Let $C = x$. Then, $B = 4x$ and $2A = 3 \times 4x = 12x$ or $A = 6x$.

$\therefore\ A : B : C = 6x : 4x : x = 6 : 4 : 1$

So, B's capital = Rs. $\left(16500 \times \frac{4}{11}\right)$ = Rs. 6000

3. **(a)** A:B:C=10 × 7 : 12 × 5 : 15 × 3 = 70 : 60 : 45 = 14 : 12 : 9

$\therefore$ C'a rent = Rs. $\left(175 \times \frac{9}{35}\right)$ = Rs. 45

4. **(b)** Let their initial investments be $x, 3x$ and $5x$ respectively.Then, $A : B : C = \left(x \times 4 + 2x \times 8\right)$:

$\left(3x \times 4 + \frac{3x}{2} \times 8\right)\left(5x \times 4 + \frac{5x}{2} \times 8\right)$

$= 20x : 24x : 40x = 5 : 6 : 10$

5. **(b)** Suppose A invests Rs. $\frac{x}{6}$ for $\frac{y}{6}$ months.

Then,B invests Rs. $\frac{x}{3}$ for $\frac{y}{3}$ months.

C invests $\left[x - \left(\frac{x}{6} + \frac{x}{3}\right)\right]$ i.e., Rs. $\frac{x}{2}$ for y Months.

$\therefore\ A : B : C = \left(\frac{x}{6} \times \frac{y}{6}\right) : \left(\frac{x}{3} \times \frac{y}{3}\right) : \left(\frac{x}{2} \times y\right) = \frac{1}{36} : \frac{1}{9} : \frac{1}{2}$

= 1: 4: 18.

Hence, B's share = Rs. $\left(4600 \times \frac{4}{23}\right)$ = Rs. 800

6. **(c)** Let the total profit be Rs. X.

Then, B $= \frac{2x}{7}$ and $A = \left(x - \frac{2x}{7}\right) = \frac{5x}{7}$

So, $A : B = \frac{5x}{7} : \frac{2x}{7} = 5 : 2$ Let B's capital be Rs. Y.

Then, $\frac{16000 \times 8}{y \times 4} = \frac{5}{7} \Rightarrow\ y = \left(\frac{16000 \times 8 \times 2}{5 \times 4}\right) = 12800$

7. **(c)** Let the total profit be Rs. Z.

Then, 20 % of

$x = 98000 \Leftrightarrow x = \left(\frac{98000 \times 100}{20}\right) = 490000$

Let the capitals of P, Q and R be Rs. $5x$, Rs. $6x$ and Rs. $6x$ respectively.

Then, $\left(5x \times 12\right) + \left(6x \times 12\right) + \left(6x \times 6\right) = 490000 \times 12$

$168x = 490000 \times 12 \Leftrightarrow x = \left(\frac{490000 \times 12}{168}\right) = 35000$

$\therefore$ R's investment = $6x$ = Rs. (6 × 35000) = Rs. 210000

8. **(b)** A : B : : $35,000 \times 12$: $60,000 \times 6$

A : B : : 7 : 6

A's profit $\frac{7}{13} \times 26,000 = 14,000$

B's profit $\frac{6}{13} \times 26,000 = 12,000$

Difference between A's and B's profit

$14,000 - 12,000 = 2,000$

9. **(b)** Let C's capital = Rs. x. Then, B's capital = Rs. $4x$.

$\therefore$ A's capital = Rs. $(12x)$.

So, A : B : C = $12x : 4x : x$ = 12 : 4 : 1

10. **(b)** Ratio of shares = Ratio of 1 day's work

$= \frac{1}{20} . \frac{1}{25} : \frac{1}{30} = 15 : 12 : 10.$

$\therefore$ A's share = Rs. $\left(2220 \times \frac{15}{37}\right)$ = Rs.900

B's share = Rs. $= \left(2220 \times \frac{12}{37}\right) = 720$

$\therefore$ A's share exceeds B's share = Rs. 180.

11. **(b)** Ratio of their profits (A's : B's : C's)

$= 2 \times 12 : 4 \times 9 : 10 \times 2 = 6 : 9 : 5$

Now, 6 + 9 + 5 = 20

Then A's share $= \frac{5600}{20} \times 6$ = Rs.1680

B's share $= \frac{5600}{20} \times 9$ = Rs.2520

C's share $= \frac{5600}{20} \times 5$ = Rs.1400

12. **(c)** A's share : B's share : C's share

$= 1500 \times 12 : 2000 \times 9 : 2250 \times 8$

$= 15 \times 12 : 20 \times 9 : 22.5 \times 8 = 180 : 180 : 180 = 1 : 1 : 1$

Therefore, each of them gets Rs. $\frac{900}{3}$ = Rs.300.

13. **(d)** Suppose B joined the business for x months.

Then using the above formula, we have $\frac{450 \times 12}{300 \times x} = \frac{2}{1}$

or $300 \times 2x = 450 \times 12$;

$x = \frac{450 \times 12}{2 \times 300} = 9$ months

Therefore, B joined after (12 – 9) = 3 months.

14. **(a)** Suppose B's capital was used for x months. Following the same rule, we have

$= \frac{7 \times 8}{9 \times x} = \frac{8}{9}$ or, $x = \frac{7 \times 8 \times 9}{8 \times 9} = 7$

Therefore, B's capital was used for 7 months.

15. **(b)** We should know that if the three investments be in the ratio $a : b : c$ and the duration for their investments be in the ratio x : y : z, then the profit would be distributed in the ratio ax : by : cz. Thus, following the same rule, the required ratio $= 2 \times 4 : 3 \times 5 : 5 \times 6 = 8 : 15 : 30$

16. **(d)** Following the same rule:

If investment is in the ratio $a : b : c$ and profit in the ratio $p : q : r$

Then the ratio of time $= \frac{\text{p}}{\text{a}} : \frac{q}{b} : \frac{r}{c}$

$$ax \;:\; by \;:\; cz \;::\; p \;:q \;:\; q : r$$

$$\frac{5}{5} \;:\; \frac{3}{6} \;:\; \frac{12}{8} \;=\; 1 \;:\; \frac{1}{2} \;:\; \frac{3}{2}$$

Therefore, the required ratio $= 2 : 1 : 3$

17. **(a)** For A's share: (10% – 8%) ≡ Rs. 220

$\therefore \quad 100\% \equiv \frac{220}{2} \times 100 \equiv$ Rs. 11000

$\therefore$ A's capital = Rs. 11000

For B's and C's share : $\frac{2}{5} \equiv 11000$

$\therefore \quad \frac{3}{5} = \frac{11000}{2} \times 3 =$ Rs. 16500

$\therefore$ B's and C's capitals are Rs. 8250 each.

18. **(d)** The difference counts only due to 40% of the profit which was distributed according to their investments.

Let the total profit be Rs. x

Then 40% of x is distributed in the ratio

125,000: 85,000 = 25 : 17

Therefore, the share of the first partner

$$= 40\% \text{ of } x\left(\frac{25}{25+17}\right)$$

$$= 40\% \text{ of } x\left(\frac{25}{42}\right) = \left(\frac{40x}{100}\right)\left(\frac{25}{42}\right) = \frac{5x}{21}$$

And the share of the second partner

$$= 40\% \text{ of } x\left(\frac{17}{42}\right) = \frac{17x}{105}$$

Now, from the question, the difference in shares

$$= \frac{5x}{21} - \frac{17x}{105} = 300$$

or, $\quad \frac{x(25-17)}{105} = 300$

or, $\quad x = \frac{300 \times 105}{8} = 3937.50$

19. **(a)** Suppose the total profit is Rs. 100.

Then, Rs. 5 goes to charity.

Now, Rs. 95 is divided in the ratio 3 : 2.

$\therefore \quad$ A's share $= \frac{95}{3+2} \times 3 =$ Rs. 57

But, we see that A's actual share is Rs. 855.

$\therefore \quad$ Actual total profit $= 855\left(\frac{100}{57}\right) = 1500$

Direct Formula: In the above case:

Total profit $= 855\left(\frac{100}{100-5}\right)\left(\frac{3+2}{3}\right)$

$$= 855\left(\frac{100}{95}\right)\left(\frac{5}{3}\right) = Rs.1500$$

20. **(c)** C invested $1 - \left(\frac{1}{6} + \frac{1}{3}\right) = 1 - \frac{1}{2} = \frac{1}{2}$ part of the capital

Now, ratio of profit = A : B : C

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

$$= \frac{1}{36} : \frac{1}{9} : \frac{1}{2} = 1 : 4 : 18$$

$\therefore \quad$ B's share $= 4600\left(\frac{4}{1+4+18}\right)$

$$= 4600\left(\frac{4}{23}\right) = \text{Rs. } 800$$

□□□