

# PARTNERSHIP PROBLEMS WITH SOLUTIONS

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# Partnership

When two or more people join hands with a common goal to attain profits, every partner invests either time, money or his patents to help partnership firm to reap profits.

There are many problems in partnerships regarding profit shares, investment period etc. Let us discuss each example one by one.

**Example 1** - Raj invested Rs 76000 in a business. After few months Monty joined him and invests Rs 57000. At the end of year both of them share the profits at the ratio of 2:1. After how many months Monty joined Raj?

**Solution** - We can simply compute per month investment of both partners Raj invested Rs 76,000 for 12 months and Monty invested Rs 57,000 for x months.

$$\text{Now } \frac{76000 \times 12}{57000 \times x} = 2 : 1$$

$$\Rightarrow \frac{76 \times 12}{2} = 56x$$
$$\Rightarrow x = 8$$

So Monty invested his money for 8 months and he joined after 4 months

**Example 2** - A and B started a business by investing money in ratio of 5:6. C joined them after few months by sharing an amount equal to B's share. At the end of year 20% profit was earned which was equal to Rs 98,000. How much money was invested by C?

**Solution** - = First of all we will calculate the weighted ratios

$$\Rightarrow A = 5 \times 12 = 60$$

$$\Rightarrow B = 6 \times 12 = 72$$

$$\Rightarrow C = 6 \times 6 = 36$$

$$\text{Total investment at the end of year} = 98000 \times \frac{100}{20} = \text{Rs } 4,90,000$$
$$\Rightarrow \text{Investment by C} = \frac{490000 \times 36}{168 \times 2} = \text{Rs } 210000$$

**Example 3** - A, B and C shared profits in ratio of 5 : 7 : 8. They partnered for 14 months, 8 months and 7 months respectively. What was the ratio of their investments?

**Solution** - Simply multiply profit sharing ratio with investment ratio to get investment amount ratio.

Let X is the total investment

$$\Rightarrow 14x = 5$$

$$\Rightarrow 8x = 7$$

$$\Rightarrow 7x = 8$$

$$\Rightarrow \text{Final investment ratio} = 20 : 49 : 64$$

### Exercise

- 1) Reena and Shaloo are partners in a business. Reena invests Rs. 35,000 for 8 months and shaloo invests Rs.42,000 for 10 months. Out of a profit of Rs.31,570. Reena's share is
  - a) Rs.9471
  - b) Rs.12,628
  - c) Rs.18,040
  - d) Rs.18,942
  - e) None of these
  
- 2) Aman started a business investing Rs.70,000. Rakhi joined him after six months with an amount of Rs.1,05,000 and Sagar joined them with Rs.1.4 lakhs after another six months. The amount of profit earned should be distributed in what ratio among Aman, Rakhi and Sagar respectively, 3 years after Aman started the business?
  - a) 7 : 6 : 10
  - b) 12 : 15 : 16
  - c) 42 : 45 : 56
  - d) Cannot be determined
  - e) None of these
  
- 3) P and Q started a business investing Rs.85,000 and Rs.15,000 respectively. In what ratio the profit earned after 2 years be divided between P and Q respectively?
  - a) 3 : 4
  - b) 3 : 5
  - c) 15 : 23
  - d) 17 : 3
  - e) None of these
  
- 4) Simran started a software business by investing Rs.50,000. After six months, Nanda joined her with a capital of Rs.80,000. After 3 years, they earned a profit of Rs.24,500. What was Simran's share in the profit?
  - a) Rs.9423
  - b) Rs.10,250
  - c) Rs.10,500
  - d) Rs.14,000
  - e) None of these
  
- 5) A and B started a partnership business investing some amount in the ratio of 3 : 5. C joined them after six months with an amount equal to that of B. In what proportion should the profit at the end of one year be distributed amount A, B and C?
  - a) 3 : 5 : 2
  - b) 3 : 5 : 5
  - c) 6 : 10 : 5
  - d) Data inadequate
  - e) None of these
  
- 6) Anand and Deepak started a business investing Rs.22,500 and Rs.35,000 respectively. Out of a total profit of Rs. 13,800. Deepak's share is
  - a) Rs.5400
  - b) Rs.7200
  - c) Rs.8400
  - d) Rs.9600
  - e) None of these



- 15) A, B, 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                      e) None of these
- 16) Sekar 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, Sekar 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                      e) None of these
- 17) A and B invest in a business in the ratio 3 : 2. If 5% of the total profit goes to charity and A's share is Rs. 855, the total profit is:
- a) Rs. 1425                      b) Rs. 1500                      c) Rs. 1537.50  
d) Rs. 1576                      e) None of these
- 18) 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.
- a) Rs. 1900                      b) Rs. 2660                      c) Rs. 2800  
d) Rs. 2840                      e) None of these
- 19) A, B and C enter into a partnership in the ratio  $\frac{7}{2} : \frac{4}{3} : \frac{6}{5}$ . After 4 months, A increases his share 50%. If the total profit at the end of one year be Rs. 21,600, then B's share in the profit is:
- a) Rs. 2100                      b) Rs. 2400                      c) Rs. 3600  
d) Rs. 4000                      e) None of these
- 20) 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:
- a) Rs. 8400                      b) Rs. 11,900                      c) Rs. 13,600  
d) Rs. 14,700                      e) None of these
- 21) Three partners shared the profit in a business in the ratio 5 : 7 : 8. They had partnered for 14 months, 8 months and 7 months respectively. What was the ratio of their investments?
- a) 5 : 7 : 8                      b) 20 : 49 : 64                      c) 38 : 28 : 21  
d) Data inadequate                      e) None of these

- 22) A and B entered into partnership with capitals in the ratio 4 : 5. After 3 months, A withdrew of his capital and B withdrew of his capital. The gain at the end of 10 months was Rs. 760. A's share in this profit is:
- a) Rs. 330                      b) Rs. 360                      c) Rs. 380  
d) Rs. 430                      e) None of these
- 23) 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?
- a) 4 months                      b) 5 months                      c) 6 months  
d) 8 months                      e) None of these
- 24) In a business, A and C invested amounts in the ratio 2 : 1, whereas the ratio between amounts invested by A and B was 3 : 2. If Rs.1,57,300 was their profit, how much amount did B receive?
- a) Rs.24,200                      b) Rs.36,300                      c) Rs.48,400  
d) Rs.72,600                      e) None of these
- 25) Anand and Deepak started a business investing Rs.22,500 and Rs.35,000 respectively. Out of a total profit of Rs.13,800, Deepak's share is :
- a) Rs.5400                      b) Rs.7200                      c) Rs.8400  
d) Rs.9600                      e) None of these
- 26) A, B and C enter into a partnership. A initially invests Rs.25 lakhs and adds another Rs.10 lakhs after one year. B initially invests Rs.35 lakhs and withdraws Rs.10 lakhs after 2 years and C invests Rs.30 lakhs. In what ratio should the profits be divided at the end of 3 years?
- a) 10 : 10 : 9                      b) 20 : 20 : 19                      c) 20 : 19 : 18  
d) Data inadequate                      e) None of these
- 27) A and B started a business jointly. A's investment was thrice the investment of B and the period of his investment was two times the period of investment of B. If B received Rs.4000 as profit, then their total profit is :
- a) Rs.16,000                      b) Rs.20,000                      c) Rs.24,000  
d) Rs.28,000                      e) None of these
- 28) A, B and C started a shop by investing Rs.27,000, Rs.72,000 and Rs.81,000 respectively. At the end of the year, the profits were distributed among them. If C's share of profit be Rs.36,000, then the total profit was :
- a) Rs.80,000                      b) Rs.95,600                      c) Rs.1,08,000  
d) Rs.1,16,000                      e) None of these
- 29) A and B are partners in a business. A contributes  $\frac{1}{4}$  of the capital for 15 months and B received  $\frac{2}{3}$  of the profit. For how long B's money was used?
- a) 6 months                      b) 9 months                      c) 10 months  
d) 1 year                      e) None of these

- 30) A, B, C enter into a partnership investing Rs.35,000, Rs.45,000 and Rs.55,000 respectively. The respective shares of A, B, C in an annual profit of Rs.40,500 are :
- a) Rs.10,500, Rs.13,500, Rs.16,500      b) Rs.11,500, Rs.13,000, Rs.16,000  
 c) Rs.11,000, Rs.14,000, Rs.15,500      d) Rs.11,500, Rs.12,500, Rs.16,500  
 e) None of these

### Solutions

1. Option B

$$\begin{aligned} \text{Ratio of their shares} &= (35000 \times 8) : (42000 \times 10) \\ &= 2 : 3 \\ \text{Reena's share} &= \text{Rs.} (31570 \times 2/5) \\ &= \text{Rs.} 12628. \end{aligned}$$

Option B

$$\begin{aligned} 2. \text{ Aman : Rakhi : Sagar} \\ &= (70000 \times 36) : (105000 \times 30) : (140000 \times 24) \\ &= 12 : 15 : 16 \end{aligned}$$

3. Option D

$$\begin{aligned} P : Q &= 85000 : 15000 \\ &= 85 : 15 \\ &= 17 : 3 \end{aligned}$$

4. Option C

$$\text{Simran : Nanda} = 50000 \times 36 : 80000 \times 30 = 3 : 4$$

$$\begin{aligned} &= (5000 \times 36) : (80000 \times 30) \\ &= 3 : 4 \\ \text{Simran's share} &= \text{Rs.} (24500 \times 3/7) \\ &= \text{Rs.} 10,500 \end{aligned}$$

$$\text{Simran's share} = \text{Rs.} 24500 \times \frac{3}{7} = \text{Rs.} 10500$$

5. Option C

Let the initial investments of A and B be 3x and 5x.

$$\begin{aligned} A : B : C &= (3x \times 12) : (5x \times 12) : (5x \times 6) \\ &= 36 : 60 : 30 \end{aligned}$$

$$= 6 : 10 : 5$$

6. Option C

Ratio of their shares

$$= 22500 : 35000$$

$$= 9 : 14$$

Deepak's share

$$= \text{Rs.}(13800 \times 14/23)$$

$$= \text{Rs. } 8400$$

7. Option B

Kamal : Sameer

$$= (9000 \times 12) : (8000 \times 7)$$

$$= 108 : 56$$

$$= 27 : 14$$

Sameer's share

$$= \text{Rs.}(6970 \times 14/41)$$

$$= \text{Rs.} 2380$$

8. Option A

Murugan : Prasanna : Arun

$$= (8000 \times 6) : (4000 \times 8) : (8000 \times 8)$$

$$= 48 : 32 : 64$$

$$= 3 : 2 : 4$$

Kamal's share

$$= \text{Rs.} 4005 \times 2/9$$

$$= \text{Rs.} 890$$

9. Option B

A : B : C

$$= (40000 \times 36) : (80000 \times 12 + 40000 \times 24) : (120000 \times 24 + 40000 \times 12)$$

$$= 144 : 192 : 336$$

$$= 3 : 4 : 7$$

10. Option D

Let B's capital be Rs.x. Then,

$$3500 \times 12 / 7x$$

$$= 2/3$$

$$\Leftrightarrow 14x = 126000$$

$$x = 9000$$

11. Option C

Suppose B joined after x months.



Then,

$$\begin{aligned}21000 \times 12 &= 36000 \times (12 - x) \\ \Leftrightarrow 36x &= 180 \\ x &= 5\end{aligned}$$

12. Option C

Suppose Y invested Rs. y

Then,

$$\begin{aligned}40000 / y &= 2 / 3 \\ \Leftrightarrow y &= (40000 \times 3 / 2). \\ \Leftrightarrow y &= 60000.\end{aligned}$$

13. Option A

A : B : C

$$\begin{aligned}&= (20000 \times 24) : (15000 \times 24) : (20000 \\ &\times 18) \\ &= 4 : 3 : 3\end{aligned}$$

B's share

$$\begin{aligned}&= \text{Rs. } \left[ 25000 \times \frac{3}{10} \right] \\ &= \text{Rs. } 7500\end{aligned}$$

14. Option B

A : B : C

Hire charges paid by B

$$\begin{aligned}&= 7 : 8 : 11 \\ &= \text{Rs. } \left[ 520 \times \frac{8}{26} \right] \\ &= \text{Rs. } 160\end{aligned}$$

15. Option A

A : B : C

$$\begin{aligned}&= [10 \times 7] : [12 \times 5] : (15 \times 3) \\ &= 70 : 60 : 45 \\ &= 14 : 12 : 9\end{aligned}$$

c's rent

$$\begin{aligned}&= \text{Rs. } [17 \\ &5 \times \frac{9}{35}] \\ &= \text{Rs. } 45.\end{aligned}$$

16. Option B

Sekar:Rajeev:Jatin=

$$\begin{aligned}&[25000 \times 12 + 35000 \times 12 + 4 \\ &5000 \times 12 : 35000 \times 24] : \\ &[35000 \times 12] \\ &= 1260000 : 840000 :\end{aligned}$$

$$\begin{aligned}
 & 420000 \\
 & = 3 : 2 : 1. \\
 \text{Rajeev's share} & = \text{Rs.} \left[ 150000 \times \frac{2}{6} \right] \\
 & = \text{Rs.} 50000.
 \end{aligned}$$

17. Option B

Let the total profit be Rs. 100.

$$\text{After paying to charity, A's share} = \left( 95 \times \frac{3}{5} \right) = \text{Rs.} 57.$$

If A's share is Rs. 57, total profit = Rs. 100.

$$\text{If A's share Rs. 855, total profit} = \left( \frac{100}{57} \times 855 \right) = 1500$$

18. Option B

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

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

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

= 39000 : 42000 : 30000

= 13 : 14 : 10

$$\text{B's share} = \text{Rs.} \left[ 7030 \times \frac{14}{37} \right] = \text{Rs.} 2660$$

19. Option D

$$\text{Ration of initial investments} = \left[ \frac{7}{2} : \frac{4}{3} : \frac{6}{5} \right] = 105 : 40 : 36$$

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

$$\begin{aligned}
 \text{A} : \text{B} : \text{C} &= \left[ 105x \times 4 + \frac{150}{100} \times 105x \times 8 \right] : \left[ 40x \times 12 \right] : \left[ 36x \times 12 \right] \\
 &= 1680x : 480x : 432x = 35 : 10 : 9
 \end{aligned}$$

$$\begin{aligned}
 \text{Hence, B's Share} &= \text{Rs.} \left[ 21600 \times \frac{10}{54} \right] \\
 &= \text{Rs.} 4000
 \end{aligned}$$

20. Option D

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

$$\text{A's Share} = \text{Rs.} \left[ 35000 \times \frac{21}{50} \right] = 14700$$

21. Option B

Let their investments be Rs.x for 14 months, Rs.y for 8 months and Rs.z for 7 months respectively.

Then,  $14x : 8y : 7z = 5 : 7 : 8$

$$\text{Now, } \frac{14x}{8y} = \frac{5}{7}$$

$$= 98x = 40y$$

$$= y = \frac{49}{20}x$$

$$\text{And, } \frac{14x}{7z} = \frac{5}{8}$$

$$= 112x = 35z$$

$$= z = \frac{112}{35}x = \frac{16}{5}x$$

$$x : y : z = x : \frac{49}{20}x : \frac{16}{5}x$$

$$= 20 : 49 : 64$$

22. Option A

$$A : B = \left[ 4x \times 3 + \left[ 4x - \frac{1}{4} \times 4x \right] \times 7 \right] : \left[ 5x \times 3 + \left[ 5x - \frac{1}{5} \times 5x \right] \times 7 \right]$$

$$= (12x + 21x) : (15x + 28x)$$

$$= 33x : 43x$$

$$= 33 : 43$$

$$A's \text{ Share} = \text{Rs. } \left[ 760 \times \frac{33}{76} \right] = \text{Rs.}330$$

23. Option D

Suppose B joined for x months. Then,

$$\text{Then, } \left[ \frac{85000 \times 12}{42500 \times \square} \right] = \frac{3}{1}$$

$$x = \left[ \frac{85000 \times 12}{42500 \times 3} \right] = 8$$

So, B joined for 8 months

$$\left. \frac{2}{9} \right] = 890$$

24. Option C

$$A : B = 3 : 2$$

$$B : A = 2 : 3 = 4 : 6 \text{ and } A : C = 2 : 1 = 6 : 3$$

$$\text{So, } B : A : C = 4 : 6 : 3 \text{ or } A : B : C = 6 : 4 : 3$$

$$B's \text{ share} = \text{Rs.} \left[ 157300 \times \frac{4}{13} \right] = \text{Rs.} 48400$$

25. Option C

$$\text{Ratio of their shares} = 22500 : 35000 = 9 : 14$$

$$\text{Deepak's share} = \text{Rs.} \left[ 13800 \times \frac{14}{23} \right] = \text{Rs.} 8400$$

26. Option E

$$A : B : C = (25 \text{ lakhs} \times 1) + (35 \text{ lakhs} \times 2) : (35 \text{ lakhs} \times 2 + 25 \text{ lakhs} \times 1) : (30 \text{ lakhs} \times 3) \\ = 95 \text{ lakhs} : 95 \text{ lakhs} : 90 \text{ lakhs} = 19 : 19 : 18$$

27. Option D

Suppose B invested Rs. x for y months. Then, A invested Rs. 3x for 2y months.

$$\text{So, } A : B = (3x \times 2y) : (x \times y) = 6xy : xy = 6 : 1$$

$$\text{So, } B's \text{ profit} : \text{total profit} = 1 : 7$$

$$\text{Let the total profit be Rs. } x. \text{ Then, } \frac{1}{7} = \frac{4000}{x} \text{ or } x = 28000$$

28. Option A

$$A : B : C = 27000 : 72000 : 81000 = 3 : 8 : 9$$

$$\text{So, } C's \text{ share} : \text{total profit} = 9 : 20$$

$$\text{Let the total profit be Rs. } x. \text{ Then, } \frac{9}{20} = \frac{36000}{x} \text{ or } x = \frac{36000 \times 20}{9} = 80000$$

29. Option C

Let the total profit be Rs. z. Then,

$$B's \text{ share} = \text{Rs.} \frac{2z}{3}, \text{ A's share} = \text{Rs.} \left[ z - \frac{2z}{3} \right] = \text{Rs.} \frac{z}{3}$$

$$\text{So, } A : B = \frac{z}{3} : \frac{2z}{3} = 1 : 2$$

Let the total capital be Rs. x and suppose B's money was used for x months. Then,

$$\frac{1}{4} \times 15 = \frac{1}{2} \times x$$

$$y = \left[ \frac{15 \times 2}{4} \right] = 10$$

Thus, B's money was used for 10 months.

30. Option A

$$A : B : C = 35000 : 45000 : 55000 = 7 : 9 : 11$$

$$\text{A's share} = \text{Rs.} \left[ 40500 \times \frac{7}{27} \right] = \text{Rs.}10500$$

$$\text{B's share} = \text{Rs.} \left[ 40500 \times \frac{9}{27} \right] = \text{Rs.}13500$$

$$\text{C's share} = \text{Rs.} \left[ 40500 \times \frac{11}{27} \right] = \text{Rs.}16500$$

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