1. *Partnership:*

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

2. *Ratio of Divisions of Gains:*

   I. When investments of all the partners are for the same time, 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*.

   II. When investments are for different time periods, then equivalent capitals are calculated for a unit of time by taking (capital x 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*.

3. *Working and Sleeping Partners:*

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

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1. 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

Answer: Option B

Explanation:

Let the total profit be Rs. 100.

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

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

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

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2. 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
Answer: Option B

Explanation:

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

$\therefore$ B's share = Rs. $\left(7030 \times \frac{14}{37}\right)$ = Rs. 2660.
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3. 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
Answer: Option D

Explanation:

Ratio of initial investments = $\left(\frac{7}{2} : \frac{4}{3} : \frac{6}{5}\right)$ = 105 : 40 : 36.
Let the initial investments be 105*x*, 40*x* and 36*x*.

$\therefore$ A : B : C = $\left(105x \times 4 + \frac{150}{100} \times 105x \times 8\right)$: (40*x* x 12) : (36*x* x 12)
= 1680*x* : 480*x* : 432*x* = 35 : 10 : 9.

Hence, B's share = Rs. $\left(21600 \times \frac{10}{54}\right)$ = Rs. 4000.
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4. 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
Answer: Option D

Explanation:

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. $\left(35000 \times \frac{21}{50}\right)$ = Rs. 14,700.

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5. 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. None of these
Answer: Option B

Explanation:

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

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

Now, $\frac{14x}{8y} = \frac{5}{7} \Leftrightarrow 98x = 40y \Leftrightarrow y = \frac{49}{20}x$

And, $\frac{14x}{7z} = \frac{5}{8} \Leftrightarrow 112x = 35z \Leftrightarrow z = \frac{112}{35}x = \frac{16}{5}x$.

$\therefore x : y : z = x : \frac{49}{20}x : \frac{16}{5}x = 20 : 49 : 64$.

6. A starts business with Rs. 3500 and after 5 months, B joins with A as his partner. After a year, the profit is divided in the ratio 2 : 3. What is B's contribution in the capital?
A. Rs. 7500
B. Rs. 8000
C. Rs. 8500

D. Rs. 9000
Answer: Option D

Explanation:

Let B's capital be Rs. x.

Then, $\left(\begin{matrix}3500 \text{ x } 12 \\ 7x\end{matrix} = \begin{matrix}2 \\ 3\end{matrix}\right)$

$\Rightarrow 14x = 126000$

$\Rightarrow x = 9000.$

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7. A and B entered into partnership with capitals in the ratio 4 : 5. After 3 months, A withdrew $\frac{1}{4}$ of his capital and B withdrew $\frac{1}{5}$ 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
Answer: Option A

Explanation:

$A : B = \left[4x \text{ x } 3 + \left(4x - \begin{matrix}1 \\ 4\end{matrix} \begin{matrix}\text{x} \\ 4x\end{matrix}\right) \text{x } 7\right] : \left[5x \text{ x } 3 + \left(5x - \begin{matrix}1 \\ 5\end{matrix} \begin{matrix}\text{x} \\ 5x\end{matrix}\right) \text{x } 7\right]$

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

$= 33x : 43x$

$= 33 : 43.$

$\therefore$ A's share = Rs. $\left(760 \text{ x } \begin{matrix}33 \\ 76\end{matrix}\right)$ = Rs. 330.

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8. A and B started a partnership business investing some amount in the ratio of 3 : 5. C joined then 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 among A, B and C?
A. 3 : 5 : 2
B. 3 : 5 : 5
C. 6 : 10 : 5
D. Data inadequate

Answer: Option C

Explanation:

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

A : B : C = (3*x* x 12) : (5*x* x 12) : (5*x* x 6) = 36 : 60 : 30 = 6 : 10 : 5.

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9. 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
Answer: Option A

Explanation:

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

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

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10. A and B started a business in partnership investing Rs. 20,000 and Rs. 15,000 respectively. After six months, C joined them with Rs. 20,000. What will be B's share in total profit of Rs. 25,000 earned at the end of 2 years from the starting of the business?
A. Rs. 7500
B. Rs. 9000
C. Rs. 9500
D. Rs. 10,000
Answer: Option A

Explanation:

A : B : C = (20,000 x 24) : (15,000 x 24) : (20,000 x 18) = 4 : 3 : 3.

$\therefore$ B's share = Rs. $\left(25000 \times \frac{3}{10}\right)$ = Rs. 7,500.

11. 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

Answer: Option D

Explanation:

Suppose B joined for x months. Then,

Then, $\left(\begin{matrix}85000 \text{ x } 12 \\ 42500 \text{ x } x\end{matrix}=\begin{matrix}3 \\ 1\end{matrix}\right)$

$\Rightarrow x = \left(\begin{matrix}85000 \text{ x } 12 \\ 42500 \text{ x } 3\end{matrix}\right) = 8.$

So, B joined for 8 months.

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12. 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

Answer: Option B

Explanation:

Aman : Rakhi : Sagar = (70,000 x 36) : (1,05,000 x 30) : (1,40,000 x 24) = 12 : 15 : 16.

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13. Arun, Kamal and Vinay invested Rs. 8000, Rs. 4000 and Rs. 8000 respectively in a business. Arun left after six months. If after eight months, there was a gain of Rs. 4005, then what will be the share of Kamal?

A. Rs. 890
B. Rs. 1335
C. Rs. 1602
D. Rs. 1780

Answer: Option A

Explanation:

Arun : Kamal : Vinay = (8,000 x 6) : (4,000 x 8) : (8,000 x 8)

= 48 : 32 : 64

= 3 : 2 : 4.

$\therefore$ Kamal's share = Rs. $\left(4005 \text{ x } \frac{2}{9}\right)$ = Rs. 890.

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14. 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. 9,423
B. Rs. 10,250
C. Rs. 12,500
D. Rs. 10,500

Answer: Option D

Explanation:

Simran : Nanda = (50000 x 36) : (80000 x 30) = 3 : 4.

$\therefore$ Simran's share = Rs. $\left(24500 \times \frac{3}{7}\right)$ = Rs. 10,500.

Directions to Solve

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
- Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
- Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.
- Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
- Give answer(E) if the data in both Statements I and II together are necessary to answer the question.

1. Ravi, Gagan and Nitin are running a business firm in partnership. What is Gagan's share in the profit earned by them?

I. Ravi, Gagan and Nitin invested the amounts in the ratio of 2 : 4 : 7.

II. Nitin's share in the profit is Rs. 8750.

A. I alone sufficient while II alone not sufficient to answer
B. II alone sufficient while I alone not sufficient to answer
C. Either I or II alone sufficient to answer
D. Both I and II are not sufficient to answer
E. Both I and II are necessary to answer

Answer: Option E

Explanation:

Let us name Ravi, Gagan and Nitin by R, G and N respectively.

I. R : G : N = 2 : 4 : 7.

II. N = 8750..

From I and II, we get:

When N = 7, then G = 4.

When N = 8750, then G = $\left(\frac{4}{7} \text{x } 8750\right)$ = 5000.

Thus, both I and II are needed to get the answer.

∴ Correct answer is (E).

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2. Rahul, Anurag and Vivek started a business together. In what proportion would the annual profit be distributed among them?

I. Rahul got one-fourth of the profit.

II. Rahul and Vivek contributed 75% of the total investment.

A. I alone sufficient while II alone not sufficient to answer
B. II alone sufficient while I alone not sufficient to answer
C. Either I or II alone sufficient to answer
D. Both I and II are not sufficient to answer
E. Both I and II are necessary to answer

Answer: Option E

Explanation:

Let the total investment be Rs. x.

Then, R = $\left(\frac{x}{4}\right)$

R + V = $\left(\frac{75}{100}\ \frac{x}{x}\right) = \frac{3x}{4}$

V = $\left(\frac{3}{4}x - \frac{x}{4}\right) = \frac{x}{2}$.

$\therefore$ A = $x - \left(\frac{x}{4} + \frac{x}{2}\right) = \frac{x}{4}$

R : A : V = $\frac{x}{4} : \frac{x}{4} : \frac{x}{2}$ = 1 : 1 : 2.

Thus, both I and II are needed to get the answer.

$\therefore$ Correct answer is (E).

Directions to Solve

Each of the questions given below consists of a question followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

1 How much did Rohit get as profit at the year-end in the business done by Nitin, Rohit and Kunal?
.

I. Kunal invested Rs. 8000 for nine months, his profit was $\frac{3}{2}$ times that of Rohit's and his investment was four times that of Nitin.

II. Nitin and Rohit invested for one year in the proportion 1 : 2 respectively.

III. The three together got Rs. 1000 as profit at the year end.

A. Only I and II
B. Only I and III
C. Question cannot be answered even with the information in all the three statements.
D. All I, II and III
E. None of these

Answer: Option D

Explanation:

I and II give:

K = Rs. (8000 x 9) for 1 month = Rs. 72000 for 1 month.

N = Rs. $\left(\frac{1}{4} \text{x } 8000 \text{ x } 12\right)$ for 1 month = Rs. 24000 for 1 month.

R = Rs. 48000 for 1 month.

∴ K : N : R = 72000 : 24000 : 48000 = 3 : 1 : 2.

III gives, total profit = Rs. 1000.

∴ Rohit's share = Rs. $\left(1000 \text{ x } \frac{2}{6}\right) = \text{Rs. } 333\frac{1}{3}$

∴ Correct answer is (D).

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2 What is R's share of profit in a joit venture?

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I. Q started business investing Rs. 80,000.

II. R joined him after 3 months.

III. P joined after 4 months with a capital of Rs. 1,20,000 and got Rs. 6000 as his share profit.

A. All I, II and III
B. I and III only
C. II and III only
D. Even with all I, II and III, the answer cannot be arrived at
E. None of these

Answer: Option D

Explanation:

From I, II and III, we get P : Q : R = (120000 x 8) : (80000 x 12) : (*x* x 9).

Since R's investment is not given, the above ratio cannot be give.

∴ Given data is inadequate.

Directions to Solve

Each of these questions is followed by three statements. You have to study the question and all the three statements given to decide whether any information provided in the statement(s) is redundant and can be dispensed with while answering the given question.

1. Three friends, P, Q and R started a partnership business investing money in the ratio of 5 : 4 : 2 respectively for a period of 3 years. What is the amount received by P as his share profit?

I. Total amount invested in the business in Rs. 22,000.

II. Profit earned at the end of 3 years is $\frac{3}{8}$ of the total investment.

III. The average amount of profit earned per year is Rs. 2750.

A. I or II or III
B. Either III only, or I and II together
C. Any two of the three
D. All I, II and III are required.
E. None of these

Answer: Option B

Explanation:

I and II give, profit after 3 years = Rs. $\left(\frac{3}{8} \text{x } 22000\right)$ = Rs. 8250.

From III also, profit after 3 years = Rs. (2750 x 3) = Rs. 8250.

$\therefore$ P's share = Rs. $\left(8250 \text{ x } \frac{5}{11}\right)$ = Rs. 3750.

Thus, (either III is redundant [or] I and II are redundant).

$\therefore$ Correct answer is (B).