



Temple of Learning

Your Ambition. Our Inspiration

QUANTITATIVE APTITUDE

**INTEREST, PARTNERSHIP & PROFIT
AND LOSS**

SIMPLE INTEREST

There is well known fact about Rate of interest, which is always assumed to be Per annum. For example 10% rate of interest Per annum.

Let us understand these definitions better and go through the simple interest formula:

- Suppose Diya invests Rs. 1000 in a bank. The bank says “10% interest”. It means the bank will pay an amount increased by 10% after 1 year.

Interest = $\text{Rs. } 1000 \times 10\% = \text{Rs. } 100$. So, the increased amount after one year = $\text{Rs. } 1000 + \text{Rs. } 100 = \text{Rs. } 1100$.

- What if Diya invests the money for 2 years?

Interest for first year = $\text{Rs. } 1000 \times 10\% = \text{Rs. } 100$

Interest for second year = $\text{Rs. } 1000 \times 10\% = \text{Rs. } 100$

Total interest = $(\text{Rs. } 1000 \times 10\%) + (\text{Rs. } 1000 \times 10\%) = \text{Rs. } 1000 \times 10\% \times 2 = \text{Rs. } 200$

Here, Rs. 1000 is the Principal (P), 10% is the percentage increase or interest rate (R), 2 is the time period (T).

Therefore, the general formula for simple interest (S.I.) is $\text{SI} = P \times R \times T / 100$.

Now, the total money that Diya will get after 2 years will be $\text{Rs. } 1000 + \text{Rs. } 200 = \text{Rs. } 1200$. The sum of money which Diya will get back is called amount.

So, **Amount = Principal + Interest**.

As per the formula of simple interest = $P \times R \times T / 100$. This can be further written as $\text{S.I.} \times 100 = P \times R \times T$.

COMPOUND INTEREST

When Interest is compounded yearly:

- In case of Compound Interest, firstly Amount is calculated. Then, we get the Compound Interest by subtracting the Principal from Amount.

The formula used to calculate Amount is as follows:

Compound interest formula: $A = P (1 + R/100)^T$

Where A is the Amount,

P is the Principal,

R is the rate of Interest, and

T is the time period for which the money is invested.

Hence, to calculate compound interest= Amount – Principal.

When Interest is compounded half-yearly:

- When the interest is compounded half-yearly, the amount after the first half year becomes the principal for the next half-year and so on.

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Compound Interest examples

Let us compare the case of two persons, one is investing at the rate which is compounded annually and the other person who is investing at the rate which is compounded half yearly:

Sunil invested Rs. 10,000 in a bank at an interest rate of 10% p.a. compounded annually whereas his friend Rishab invested the same amount with a private finance company at the same rate, but compounded half-yearly.

Compounded Annually	Compounded Half Yearly
$P = \text{Rs. } 10,000$ $R = 10\% \text{ p.a.,}$ $T = 1 \text{ year}$ $C.I. = \text{RS. } (1000 \times 10 \times 1)/100 = \text{RS. } 1000$ In this case, the interest has been calculated directly by applying the simple interest formula. Moreover, it is a case of one year only, thus it can be found by applying the simple interest formula as well.	$P = \text{Rs. } 10,000$ $R = 10\% \text{ p.a.,}$ $T = 1 \text{ year} = 2 \text{ half years}$ For first half year: $I = \text{RS. } (10000 \times 10 \times 1/2)/100$ $= \text{RS. } (10000 \times 10 \times 1)/200 = \text{RS. } 500$ $A = P + I = \text{RS. } 10000 + \text{RS. } 500 = \text{RS. } 10500$ Now, for next half year: $P = \text{RS. } 10,500 \text{ So } I =$ $I = \text{RS. } (10500 \times 10 \times 1/2)/100 = \text{RS. } (10500 \times 10 \times 1)/200$ $= \text{RS. } 525$ $A = \text{Rs. } 10500 + \text{Rs. } 525 = \text{Rs. } 11025$ $C.I. = \text{Final amount} - P$ $= \text{Rs. } 11025 - \text{Rs. } 10000 = \text{Rs. } 1025$

PARTNERSHIP

Simple Partnership:

Unequal investment & equal time Period: Considering two people discussed above Alma & Balma started a business with Rs. 1 lakh & 100 each. So at the end of the year, if there is the profit of Rs. 10000 who do you think will get more share in this profit. Of course, the one with 1Lakh investment because he had taken more risk in the business venture (the exact amount of their profit we will discuss).

So, Profit \propto investment (Time Period constant)

Equal Investment & unequal time period: Consider a scenario where Alma & Balma Just had Rs. 100 each on them but Alma Invest for 10 years & Balma invest for 1 year. And after 10 years their business gives them a profit of Rs. 1Lakh. As Alma had invested for a longer duration, he would get more shares in the profit.

So, Profit \propto Time (Investment constant)

Compound partnership:

If the time and investment both begin change according to the requirements of the investors, we simply need to combine the above stated equations into one. The result obtained will be:

Profit \propto investment \times time

Also, we can also say that ratio of their profits is equal to the ratio of product of their Investment & Time period.

To solve with simple Partnership Problems. Let's take an example of Math's Partnership as given as below:

Let us consider Alma invest Rs. 1000 for 2 year & Balma Invest Rs. 2000 for 3 years. At the end profit is Rs. 8000. What is the net profit of Alma & Balma?

Solution: Profit \propto investment \times time

$$1000 \times 2 : 2000 \times 3 = 1:3 \Rightarrow \text{Ratio of their profit} = 1:3$$

$$\text{Alma's Profit share} = \frac{1}{4} \times 8000 = \text{Rs. } 2000$$

$$\text{Balma's Profit share} = \frac{3}{4} \times 8000 = \text{Rs. } 6000$$

Sleeping Partner:

Sleeping Partner gives money, credit or different resources, for example, a land, building or machinery; however, has nothing to do with the business management.

Working Partner:

A partner who has responsibilities for maintaining the business as an active partner. Each partner plays an important role, like production or marketing. Working Partner also gets its incentive due to its management. Then remaining profit is dividing between both according to their investment.

PROFIT & LOSS

- **Cost Price (CP):** The price, which is paid to acquire a product, is called cost price. All the overhead expenses (transportation, taxes etc.) are also included in the cost price.
- **Selling Price (SP):** The sum of money, which is finally received for the product i.e. the price at which the product is finally disposed off is called the Selling price.
- **Marked Price (MP):** The price, which is listed or marked on the product, is also known as quotation price/printed price/catalogue price/invoice price.
- **Profit:** If selling price is greater than Cost price, then excess of SP to CP is called Gain or Profit.

$$\text{PROFIT} = \text{SELLING PRICE} - \text{COST PRICE}$$

E.g. Let the cost price of a quintal of rice be Rs 1000 and the shopkeeper sells the same for Rs 1125 per quintal, then profit = $1125 - 1000 = \text{Rs. } 125$ per quintal.

- **Loss:** If selling price is less than Cost price, then excess of CP to SP is called Loss.

$$\text{LOSS} = \text{COST PRICE} - \text{SELLING PRICE}$$

E.g. Let the cost price of a score of mangoes be Rs. 220. If the fruit vendor retails each mango for Rs. 10, then cost price per mango = $\text{Rs. } 220/20 = \text{Rs. } 11/\text{mango}$ (As you know one score has 20 items)

Selling price = Rs. 10 / mango \therefore Loss = $\text{Rs. } 11 - \text{Rs. } 10 = \text{Re. } 1$ per mango

Note: Profit and loss percentage is always calculated on cost price, unless otherwise specified.

Now let us come to profit loss formula in percentage, which will be followed by questions on profit and loss.

- **Profit percentage formula:** The profit percent can be calculated as:

$$\underline{\text{Profit \%} = 100 \times \text{Profit/Cost Price.}}$$

- **Percentage Loss:** The loss percent can be calculated as;

$$\underline{\text{Loss \%} = 100 \times \text{Loss/Cost Price.}}$$

Question No. - 1

Suresh for 2 years invested Rs. 500 in SBI. He also invested Rs. 300 in ICICI for 4 years. At the end he received Rs. 220 from both banks as simple interest. What must have been rate of interest?

- a. 10%
- b. 12%
- c. 11%
- d. 5.5%



ANSWER: 10%

Explanation:

$$\text{Simple Interest} = \text{SI} = \frac{PRT}{100}$$

Where P = Principal, R = Rate of interest and T = time period

Total SI = SI from SBI and SI from ICICI

$$\therefore 220 = \frac{500 \times R \times 2}{100} + \frac{300 \times R \times 4}{100}$$

$$\therefore 220 = 10R + 12R$$

$$\therefore R = 10\% = \text{Rate of Interest}$$



Question No. - 2

Raman paid Rs. 11400 as interest after 9 years. He had borrowed some money at rate of 6% for first two years, 9% for next three years and 14% for rest of the period. How much money did he borrow?

- a. Rs. 10000
- b. Rs. 15000
- c. Rs. 12000
- d. Rs. 12500



ANSWER: Rs. 12000

Explanation:

Here, Principal amount is same but rate of interest is different for different time periods.

So **simple interest would also be different**

$$\text{Simple Interest} = \frac{PRT}{100}$$

Where P = Principal, R = Rate of interest and T = time period

Time periods are 2 years, 3 years and (9-2-3=) 4 years

$$\therefore 11400 = \frac{P \times 6 \times 2}{100} + \frac{P \times 9 \times 3}{100} + \frac{P \times 14 \times 4}{100}$$

$$\therefore P = \text{Rs. 12000}$$



Question No. - 3

Aman got a salary of Rs. 8600. The salary was invested by him in two parts. Find the difference between the two parts of his salary, if in first part he got some simple interest at 15% per annum in 4 years, which was same as the second part which he invested at 20% for 3 years.

- a. Rs. 0
- b. Rs. 2400
- c. Rs. 100
- d. Rs. 4500



ANSWER: Rs. 0

Explanation:

Let, **one part of salary be Rs. M**, then **other part is Rs. (8600-M)**

We know that **simple interest is same**

$$\text{Simple Interest} = \text{SI} = \frac{PRT}{100}$$

Where P = Principal, R = Rate of interest and T = time period

$$\therefore \frac{M \times 15 \times 4}{100} = \frac{(8600 - M) \times 20 \times 3}{100}$$

$\therefore M = \text{Rs. } 4300 = \text{One part of salary}$

$\text{Second part} = 8600 - 4300 = \text{Rs. } 4300$

$\text{Difference between parts} = 4300 - 4300 = \text{Rs. } 0$



Question No. - 4

**In 40 years an amount becomes 6 times the original amount.
What is the rate of interest?**

- a.** 12.5%
- b.** 24%
- c.** 6.67%
- d.** 34%



ANSWER: 12.5%

Explanation:

Original amount = P

In T = 40 years, Amount = 6P

∴ Interest received in 40 years = 6P - P = 5P

$$\text{Simple Interest} = \frac{PRT}{100}$$

$$\therefore 5P = \frac{P \times R \times 40}{100}$$

$$\therefore R = 12.5\%$$



Question No. - 5

A man got Rs. 130 less, as simple interest, when he invested Rs. 2000 for 4 years as compared to investing Rs. 2250 for same duration. What is the rate of interest?

- a. 12%
- b. 13%
- c. 12.5%
- d. 10.50%



ANSWER: 13%

Explanation:

Let Simple Interest be S

$$\therefore S_2 - S_1 = \text{Rs. } 130$$

$$\text{Simple Interest} = \frac{PRT}{100}$$

$$\therefore \frac{P_2 \times R_2 \times T_2}{100} - \frac{P_1 \times R_1 \times T_1}{100} = 130$$

$$\therefore \frac{2250 \times R \times 4}{100} - \frac{2000 \times R \times 4}{100} = 130$$

$$\therefore 90R - 80R = 130$$

$$\therefore R = 13\%$$



Question No. - 6

The principal which will amounts to Rs. 270.40 in 2 years at the rate of 4% per annum compound interest, is = ?

- A. Rs. 200
- B. Rs. 225
- C. Rs. 250
- D. Rs. 220



Answer & Solution

Answer: Option C

Solution:

$$4\% = \frac{1}{25}$$
$$= \frac{26 \rightarrow \text{Amount}}{25 \rightarrow \text{Principal}}$$

Time = 2 years

Principal Amount

25 26

25 26

625 676

↓ × 0.4 ↓ × 0.4

250 270.40

Hence required principal
= Rs.250



Question No. - 7

Mr. Duggal invested Rs. 20000 with rate of interest @ 20 p.c.p.a. The interest was compounded half - yearly for first one year ans in the next year it was compounded yearly. What will be the total interest earned at the end of 2 year ?

- A. Rs. 8040
- B. Rs. 8800
- C. Rs. 9040
- D. Rs. 9800



Answer & Solution

Answer: Option C

Solution:

Amount

$$= \text{Rs.} \left[20000 \left(1 + \frac{10}{100} \right)^2 \left(1 + \frac{20}{100} \right) \right]$$

$$= \text{Rs.} \left(20000 \times \frac{11}{10} \times \frac{11}{10} \times \frac{6}{5} \right)$$

$$= \text{Rs.} 29040$$

$$\text{C.I.} = \text{Rs.} (29040 - 20000)$$

$$= \text{Rs.} 9040$$



Question No. - 8

A sum of money on compound interest amounts to Rs. 10648 in 3 years and Rs. 9680 in 2 years. The rate of interest per annum is = ?

- A. 5%
- B. 10%
- C. 15%
- D. 20%



Answer & Solution

Answer: Option B

Solution:

Let the sum be Rs. P and rate of interest be R% per annum. Then,

$$P \left(1 + \frac{R}{100}\right)^2 = 9680 \dots\dots (1)$$

$$P \left(1 + \frac{R}{100}\right)^3 = 10648 \dots\dots (2)$$

On dividing equation (2) by (1) :

$$1 + \frac{R}{100} = \frac{10648}{9680}$$

$$\Rightarrow \frac{R}{100} = \frac{10648}{9680} - 1$$

$$\Rightarrow \frac{R}{100} = \frac{10648 - 9680}{9680}$$

$$\Rightarrow \frac{R}{100} = \frac{968}{9680}$$

$$\Rightarrow \frac{R}{100} = \frac{1}{10}$$

$$\begin{aligned}\Rightarrow R &= \frac{1}{10} \times 100 \\ &= 10\%\end{aligned}$$



Question No. - 9

A person deposited a sum of of Rs 6000 in a bank at 5% per annum simple interest. Another person deposited Rs 5000 at 8% per annum compound interest. After two years, the difference of their interest will be = ?

- A. Rs. 230
- B. Rs. 232
- C. Rs. 832
- D. Rs. 600



Answer & Solution

Answer: Option B

Solution:

Principal (P_1) = Rs. 6000

Time (t) = 2 years

Rate % = 5%

Simple interest

$$= \frac{6000 \times 5 \times 2}{100} = \text{Rs. } 600$$

Principal (P_2) = Rs. 5000

Time (t) = 2 years

Rate % = 8%

2 year effective rate for Compound interest

$$= 8 + 8 + \frac{8 \times 8}{100} = 16.64\%$$

Compound Interest

$$= 5000 \times \frac{16.64}{100} = \text{Rs. } 832$$

Difference

$$= \text{Rs. } (832 - 600)$$

$$= \text{Rs. } 232$$



Question No. - 10

What will be the difference between S.I. and C.I. on a sum of Rs. 15000 for 2 years at the same rate of interest of $12\frac{1}{2}\%$ per annum ?

- A. Rs. 230.550
- B. Rs. 234.375
- C. Rs. 250.129
- D. Rs. 324.357



Answer & Solution

Answer: Option B

Solution:

$$\begin{aligned} \text{S.I.} &= \text{Rs.} \left(15000 \times \frac{25}{2} \times 2 \times \frac{1}{100} \right) \\ &= \text{Rs.} 3750 \end{aligned}$$

$$\begin{aligned} \text{C.I.} &= \text{Rs.} \left[15000 \left(1 + \frac{25}{2 \times 100} \right)^2 - 15000 \right] \\ &= \text{Rs.} \left(15000 \times \frac{9}{8} \times \frac{9}{8} - 15000 \right) \\ &= \text{Rs.} (18948.375 - 15000) \\ &= \text{Rs.} 3984.375 \end{aligned}$$

Difference

$$\begin{aligned} &= \text{Rs.} (3984.375 - 3750) \\ &= \text{Rs.} 234.375 \end{aligned}$$



Question No. - 11

The simple interest on a sum of money at 4% per annum for 2 years is Rs 80. The compound interest on the same sum for the same period is = ?

- A. Rs. 82.60
- B. Rs. 82.20
- C. Rs. 81.80
- D. Rs. 81.60



Answer & Solution

Answer: Option D

Solution:

$$\text{Rate \%} = 4\%$$

$$\text{Time } (t_1) = 2 \text{ years}$$

SI for 2 years

$$= 4 \times 2 = 8\%$$

CI for 2 years

$$= 4 + 4 + \frac{4 \times 4}{100}$$

$$= 8.16\%$$

Required CI

$$= \frac{80}{8} \times 8.16$$

$$= Rs. 81.60$$



Question No. - 12

Rohit started a partnership business with Mohit with investing amount of Rs. 50000 and 45000 respectively. After 8 months Deepak joined them with the amount of 30000. At the end of year, they get the profit of Rs. 4200. How much money Deepak get as his profit?

- 1. Rs. 300
- 2. Rs. 400
- 3. Rs. 500
- 4. None of these



Answer : Option 2

Ratio of their profit = Rohit : Mohit : Deepak=

$50000 \times 12 : 45000 \times 12 : 30000 \times 4 = 10 : 9 : 2$

Deepak's profit's share = $4200 \times \frac{2}{21} = \text{Rs. } 400$



Question No. - 13

Sahil & Nitish rent a stable for 9 months. Sahil puts in 84 horses for 5 months. How many horses can Nitish put in remaining month, if Nitish pay twice of Sahil?

1. 210

2. 310

3. 120

4. None of these



Answer : Option 1

Let X be the number of horses put by the Nitish for 4 months;

$$(84 \times 5) / (X \times 4) = 1/2$$

$$X=210$$



Question No. - 14

Shina and Bhuwan started a business of utensils in Jagadhari by investing their money in the ratio of 4:3 respectively. After seven months, Preeti joined them by investing her money equal to Shina's investment. After 2 years, they get 25% profit which is equal to the amount Rs. 14750. Find the Investment of Preeti.

- 1. Rs. 24000
- 2. Rs. 17000
- 3. Rs.18000
- 4. None of these



Answer : Option 2

Let their weighted ratio be $4x$, $3x$, and $4x$

First of all, to calculate their weighted ratios

$$\Rightarrow \text{Shina} = 4 \times 24 \text{ (2 years} = 24 \text{ months)} = 96$$

$$\Rightarrow \text{Bhuwan} = 3 \times 24 \text{ (2 years} = 24 \text{ months)} = 72$$

$$\Rightarrow \text{Preeti} = 4 \times 17 \text{ (24 months} - 7 \text{ months)} = 68$$

Ratio will be: 24:18:17

Total profit after 2 years = $14750 \times 100/25 = \text{Rs } 59000$

\Rightarrow Investment by Preeti = $59000 \times 17 / 59 = \text{Rs } 17000$



Question No. - 15

Three partners Meena, Sheena and Love shared the profit in a partnership business in the ratio 3:4:7. They had partnered for 7 months, 7 months and 9 months respectively. Find their investment ratio?

- 1. 27:36:49
- 2. 29:37:49
- 3. 30:29:47
- 4. None of these



Answer : Option 1

Let their investments be Rs. x for 7 months, Rs. y for 7 months and Rs. z for 9 months respectively.

Then, $7x : 7y : 9z = 3:4:7$.

$$\text{Now, } (7x/7y) = (3/4) \Rightarrow 4x = 3y \Rightarrow y = (4/3)x$$

$$\text{And, } (7x / 9z) = (3/7) \Rightarrow 49x = 27z \Rightarrow z = (49/27)x$$

By substituting the values of y and z in the form of x

$$\text{Therefore, } x : y : z = x : (4/3)x : (49/27)x$$

$$\text{Hence, } x:y:z = 27:36:49$$



Question No. - 16

Anu started a business with the amount of Rs. 27000 and after some months Kusum with the investing amount of Rs. 36000. At the end of year, the ratio of their profit is 3:2. After how many months Kusum joined?

1. 4

2. 6

3. 7

4. None of these



Answer : Option 2

Suppose Kusum joined for x months. Then, $(27000 \times 12) / (36000 \times x) = 3/2$.

By solving for x, we get the value of x = 6.

Hence, Kusum joined for 6 months.



Question No. - 17

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 & Solution

Answer: Option B

Solution:

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,

$$\frac{14x}{8y} = \frac{5}{7} \Rightarrow 98x = 40y$$

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

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

$$\Rightarrow 112x = 35z$$

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

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

(Multiply by 20)

$$\Rightarrow 20 : 49 : 64$$



Question No. - 18

Three partners A , B , C start a business . B's Capital is four times C's capital and twice A's capital is equal to thrice B's capital . If the total profit is Rs 16500 at the end of a year ,Find out B's share in it.

- A. Rs. 4000
- B. Rs. 5000
- C. Rs. 6000
- D. Rs. 7000



Answer & Solution

Answer: Option C

Solution:

Suppose C's capital = x then

B's capital = $4x$ (Since B's Capital is four times C's capital)

A's capital = $6x$ (Since twice A's capital is equal to thrice B's capital)

$A : B : C = 6x : 4x : x$

$= 6 : 4 : 1$

$$\text{B's share} = 16500 \times \frac{4}{11} = 1500 \times 4 = 6000.$$



Question No. - 19

If 4 (P's Capital) = 6 (Q's Capital) = 10 (R's Capital), then out of the total profit of Rs. 4650 , R will receive

- A. Rs. 600
- B. Rs. 700
- C. Rs. 800
- D. Rs. 900



Answer & Solution

Answer: Option D

Solution:

Let

P's capital = p,

Q's capital = q and

R's capital = r.

Then

$$4p = 6q = 10r$$

$$\Rightarrow 2p = 3q = 5r$$

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

$$\Rightarrow r = \frac{2p}{5}$$

$$P : Q : R = p : \frac{2p}{3} : \frac{2p}{5}$$

(Multiply by 15)

$$= 15 : 10 : 6$$

$$R's\ share = 4650 \times \frac{6}{31}$$

$$= 150 \times 6$$

$$= \text{Rs. } 900$$



Question No. - 20

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 & Solution

Answer: Option A

Solution:

$$A : B : C$$

$$= (20,000 \times 24) : (15,000 \times 24) : (20,000 \times 18)$$

$$= 4 : 3 : 3.$$

So B's Share

$$= \text{Rs. } 25000 \times \frac{3}{10}$$

$$= \text{Rs. } 7500$$



Question No. - 21

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 & Solution

Answer: Option D

Solution:

Let B's capital be Rs. x

∴ A's share in 12 months = 3500×12

And, B's share in 7 months = $7x$

$$\text{Then, } \frac{3500 \times 12}{7x} = \frac{2}{3}$$

$$\Rightarrow 14x = 126000$$

$$\Rightarrow x = 9000$$



Question No. - 22

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 & Solution

Answer: Option A

Solution:

$$A : B$$

$$= \left[4x \times 3 + \left(4x - \frac{1}{4} \times 4x \right) \times 7 \right] : \left[5x \times 3 + \left(5x - \frac{1}{5} \times 5x \right) \times 7 \right]$$
$$= (12x + 21x) : (15x + 28x)$$

$$= 33x : 43x = 33 : 43$$

$$\therefore \text{A's share} = \text{Rs.} \left(760 \times \frac{33}{76} \right)$$

$$= \text{Rs.} 330$$



Question No. - 23

A sells an article to B at a profit of 10% B sells the article back to A at a loss of 10%. In this transaction:

- A. A neither losses nor gains
- B. A makes a profit of 11%
- C. A makes a profit of 20%
- D. B loses 20%



Answer & Solution

Answer: Option B

Solution:

First Method

Let CP was 100 for A originally

A sells article to B at 10% profit,

$$CP \text{ for B} = 100 + 10\% \text{ of } 100 = 110$$

Now, B sells it A again with loss 10%

$$\text{Now, CP for A this time} = 110 - 10\% \text{ of } 110 = 99$$

$$\text{A makes Profit} = 110 - 99 = 11$$

$$\% \text{profit for A} = \frac{11 \times 100}{100} = 11\%$$

Second Method

It could be easily shown by net percentage change graphic.

$$100(A) == 10\%(\text{Profit}) \Rightarrow 110(B) == 10\%(\text{Loss}) \Rightarrow 99(A)$$

In this transaction A makes a profit of $(110 - 99 = 11\%)$ 11%

[10% on selling to B and 1% profit on buying back from B]

Question No. - 24

A person sold a horse at a gain of 15%. Had he bought it for 25% less and sold it for Rs. 600 less, he would have made a profit of 32%. The cost price of the horse was:

- A. Rs. 3,750
- B. Rs. 3,250
- C. Rs. 2,750
- D. Rs. 2,250



Answer & Solution

Answer: Option A

Solution:

Let the original CP = Rs. X

Hence,

$$SP = X + 15\% \text{ of } X$$

$$= \frac{115X}{100}$$

$$= Rs. \frac{23x}{20}$$

New CP = $x - 25\% \text{ of } X$

$$= \frac{75x}{100} = \frac{3x}{4}$$

$$\text{New SP} = \frac{3x}{4} + 32\% \text{ of } \frac{3x}{4}$$

$$= Rs. \frac{99x}{100}$$

According to the question,

$$\frac{23x}{20} - \frac{99x}{100} = 600$$

$$\text{Or, } \frac{115x - 99x}{100} = 600$$

$$16x = 600 \times 100$$

$$X = 600 \times \frac{100}{16}$$

$$= Rs. 3750$$



Question No. - 25

A dishonest dealer marks up the price of his goods by 20% and gives a discount of 10% to the customer. He also uses a 900 gram weight instead of a 1 kilogram weight. Find his percentage profit due to these maneuvers?

- A. 20%
- B. 11%
- C. 14%
- D. 18%



Answer & Solution

Answer: Option A

Solution:

Let CP = Rs. 1 per gram

Then SP of 1000gram is $1000 + 20\% \text{ of } 1000 = \text{Rs. } 1200$

Now Dealer gives 10% discount = $1200 - 10\% \text{ of } 1200 = \text{Rs. } 1080$

Then, Dealer is dishonest and sells 900 g is 1080

And, CP of 900 grams is 900

Profit = $1080 - 900 = 180$

$$\therefore \% \text{ profit} = \frac{180 \times 100}{900} = 20\%$$



Question No. - 26

Raghavan purchase a scooter at $\frac{13}{15}$ of its selling price and sold it at 12% more than its selling price. His gain is -

- A. 20%
- B. $29\frac{3}{13}\%$
- C. 30%
- D. $38\frac{1}{13}\%$



Answer & Solution

Answer: Option B

Solution:

Let S.P. be Rs. x

Then,

$$\text{C.P.} = \text{Rs. } \frac{13}{15}x,$$

Receipt = 112% of Rs. x

$$= \text{Rs. } \frac{28}{25}x$$

$$\text{Gain} = \text{Rs. } \left(\frac{28x}{25} - \frac{13x}{15} \right)$$

$$= \text{Rs. } \frac{19x}{75}$$

\therefore Gain%

$$= \left(\frac{19x}{75} \times \frac{15}{13x} \times 100 \right) \%$$

$$= \frac{380}{13}\%$$

$$= 29\frac{3}{13}\%$$



Question No. - 27

A manufacturer sells an article to a wholesale dealer at a profit of 10% . The wholesale dealer sells it to a shopkeeper at 20% profit. The shop - keeper sells it to a customer for Rs. 56100 at a loss of 15% . Then the cost price of the article to the manufacturer is = ?

- A. Rs. 25000**
- B. Rs. 10000**
- C. Rs. 50000**
- D. Rs. 55000**



Answer & Solution

Answer: Option C

Solution:

$$\begin{aligned}&= \left(\frac{56100 \times 100 \times 100 \times 100}{(100 - 15) \times (100 + 10) \times (100 + 20)} \right) \\&= \left(\frac{56100 \times 100 \times 100 \times 100}{85 \times 110 \times 120} \right) \\&= \text{Rs. 50000}\end{aligned}$$



Question No. - 28

A vendor bought toffees at 6 for a rupee. How many for a rupee must he sell to gain 20%?

- A. 4
- B. 7
- C. 5
- D. 6



Answer & Solution

Answer: Option C

Solution:

C.P. of 6 toffees = *Rs.* 1

S.P. of 6 toffees

$$= 120\% \text{ of } Rs. 1 = Rs. \frac{6}{5}$$

For *Rs.* $\frac{6}{5}$, toffees sold = 6.

For *Rs.* 1, toffees sold = $6 \times \frac{5}{6} = 5$



Question No. - 29

When a plot is sold for Rs. 18,700, the owner loses 15%. At what price must that plot be sold in order to gain 15%?

- A. Rs. 21,000
- B. Rs. 22,500
- C. Rs. 25,300
- D. Rs. 25,800



Answer & Solution

Answer: Option C

Solution:

$$85 : 18700 = 115 : x$$

$$\Rightarrow x = \frac{18700 \times 115}{85} = 25300$$

Hence, S.P. = Rs. 25300



Question No. - 30

A merchant marked cloth at Rs. 50 metre. He offers 2 successive discounts of 15% and 20%. The net price/metre is = ?

- A. Rs. 32.50**
- B. Rs. 42.50**
- C. Rs. 34.00**
- D. Rs. 40.00**



Answer & Solution

Answer: Option C

Solution:

$$15\% = \frac{3}{20}(-)$$

$$20\% = \frac{1}{5}(-)$$

Marked Price : Net Price

$$\begin{array}{rcl} 20 & : & 17 \\ 5 & : & 4 \\ \hline 100 & : & 68 \end{array}$$

100 units = Rs. 50

1 unit = Rs. 0.50

68 units = Rs. 34



Question No. - 31

If the cost price of 10 articles is equal to the selling price of 7 articles, then the gain or loss percent is = ?

- A. 51% gain
- B. $42\frac{6}{7}\%$ gain
- C. 35% loss
- D. $42\frac{6}{7}\%$ loss



Answer & Solution

Answer: Option B

Solution:

According to the question,

10 Cost Price = 7 Selling Price

$$\frac{CP}{SP} = \frac{7}{10} \rightarrow 3 \text{ unit profit}$$

$$\text{Profit\%} = \frac{3}{7} \times 100$$

$$= 42\frac{6}{7}\% \text{ gain}$$



Question No. - 32

Bhuvnesh sell two tape recorders at the same price. On one, he gains 10% and on the other he loses 10%. The total gain or loss in the transaction is = ?

- A. 1% gain
- B. 1% loss
- C. No loss or gain
- D. 2% loss



Answer & Solution

Answer: Option B

Solution:

In such type of question always loss

$$\frac{P\% \times L\%}{100} = \frac{10 \times 10}{100} = 1\% \text{ loss}$$



Question No. - 33

A man purchases two pens for Rs. 740. He sells one at 12 % profit and the other at a 8 % loss. Then he neither gains nor loses. Find the cost price of each pen (in Rs.).

- A. 324, 416
- B. 296, 444
- C. 288, 452
- D. 365, 375



Sol : Option B

CP of 2 pens = 740. Let CP of 1st pen is x and CP of 2nd pen is y.

Since there is no profit and loss in the whole transaction,
so 12% of x = 8% of y

$$\Rightarrow x:y = 2:3$$

Hence the cost of first pen = $(2/3) \times 740 = \text{Rs}296$ and that of the second pen = $(3/5) \times 740 = \text{Rs}444$



Question No. - 34

A man sells an article at a profit of 8 per cent. If the cost price were 10 per cent less and the selling price Rs. 18 less, his profit would have been 15 per cent. Find the cost price of the article.

- A. Rs. 430
- B. Rs. 450
- C. Rs. 220
- D. Rs. 400



Sol : Option D

Let CP of the article = 100 ∴ Old SP = 108. New CP = 90. As the profit is 15%, so the new SP = $90 \times 115/100 = 103.5$.

The difference in the two selling prices = $108 - 103.5 = \text{Rs } 4.5$. If difference in SP is 4.5 then CP = 100, If difference in SP is 18 then CP = $(100/4.5) \times 18 = \text{Rs } 400$



Question No. - 35

A man sells two flats at the rate of Rs. 1.995 lakhs each. On one he gains 5% and on the other, he loses 5% . His gain or loss percent in the whole transaction is -

- A. 0.25% loss
- B. 0.25% gain
- C. 2.5% loss
- D. 25% loss



Answer & Solution

Answer: Option A

Solution:

$$\begin{aligned}\text{Loss \%} &= \left(\frac{5}{10}\right)^2 \% \\ &= (0.5)^2 \% \\ &= 0.25 \% \\ &= 0.25\% \text{ loss}\end{aligned}$$



Question No. - 36

A shopkeeper sells two watches for Rs. 308 each. On one he gets 12% profit and on the other 12% loss. His profit or loss in the entire transaction was -

- A. Neither profit, nor loss
- B. $1\frac{11}{25}\%$ loss
- C. $1\frac{11}{25}\%$ profit
- D. $3\frac{2}{25}\%$ loss



Answer & Solution

Answer: Option B

Solution:

loss %

$$= \left(\frac{\text{Common Loss and Gain \%}}{10} \right)^2 \%$$

$$= \left(\frac{12}{10} \right)^2 \%$$

$$= \frac{36}{25} \%$$

$$= 1\frac{11}{25} \%$$

$$= 1\frac{11}{25} \% \text{ loss}$$



Question No. - 37

A shopkeeper fixes the marked price of an item 35% above its cost price. The percentage of discount allowed to gain 8% is = ?

- A. 20%
- B. 27%
- C. 31%
- D. 43%



Answer & Solution

Answer: Option A

Solution:

Let C.P. = Rs. 100

Then,

M.P. = Rs. 135,

S.P. = Rs.108

∴ Discount %

$$= \left(\frac{27}{135} \times 100 \right) \%$$

$$= 20\%$$



Question No. - 38

James and Vaibhav are gamblers. Last year, the ratio between money lost by James and Vaibhav was 4 : 5. The ratios of their individual losses of the last year and present year are 3 : 5 and 2 : 3 respectively. If total loss incurred to both of them this year is Rs. 357000 the present loss of James is = ?

- A. Rs. 170000
- B. Rs. 159000
- C. Rs. 168000
- D. Rs. 137000



Answer & Solution

Answer: Option C

Solution:

James : Vaibhav

Last year → 4 : 5

Let last years total loss ⇒ 90

$$\text{Last years loss of James} = 90 \times \frac{4}{9} = 40$$

$$\text{Last years loss of Vaibhav} = 90 \times \frac{5}{9} = 50$$

James → Last year : Present year

3 : 5

3 ratio → 40

$$5 \text{ ratio} \rightarrow \frac{200}{3}$$

Vaibhav → Last year : Present year

2 : 3

2 ratio → 50

1 ratio → 25

3 ratio → 75

James : Vaibhav

$$\begin{aligned}\text{Present year} \rightarrow \frac{200}{3} &: 75 \\ 8 &: 9\end{aligned}$$

17 ratio → 357000

1 ratio → 21000

8 ratio → 168000



Question No. - 39

The marked price of a shirt and trousers are in the ratio 1 : 2. The shopkeeper gives 40% discount on the shirt. If the total discount on the set of the shirt and trousers is 30%, the discount offered on the trousers is = ?

- A. 15%
- B. 20%
- C. 25%
- D. 30%



Answer & Solution

Answer: Option C

Solution:

Let the marked price of the shirt and trousers be Rs. x and Rs. $2x$ respectively.

Let the discount offered on trousers be $y\%$

Then, Selling price of shirt

$$= 60\% \text{ of Rs. } x$$

$$= \text{Rs.} \left(\frac{60}{100} \times x \right)$$

$$= \text{Rs.} \frac{3x}{5}$$

Selling price of trousers

$$= (100 - y)\% \text{ of Rs. } 2x$$

$$= \text{Rs.} \left[\frac{(100 - y)}{100} \times 2x \right]$$

$$= \text{Rs.} \left[\frac{(100 - y)x}{50} \right]$$

Combined Selling price of shirt and trousers

$$= 70\% \text{ of Rs.} (x + 2x)$$

$$= \text{Rs.} \left(\frac{70}{100} \times 3x \right)$$

$$= \text{Rs.} \frac{21x}{10}$$

$$\therefore \frac{3x}{5} + \frac{(100 - y)x}{50} = \frac{21x}{10}$$

$$\Rightarrow \frac{130 - y}{50} = \frac{21}{10}$$

$$\Rightarrow 1300 - 10y = 1050$$

$$\Rightarrow y = 25$$



Question No. - 40

A person spent Rs 50000 to purchase a desktop computer and a laptop computer. He sold the desktop at 20% profit and the laptop at 10% loss. If overall he made a 2% profit then the purchase price, in rupees, of the desktop is

- A) 22000
- B) 19000
- C) 23000
- D) 20000



D = Price of Desktop and L = Price of Laptop

$$0.2 D - 0.1 L = 2 \% \text{ of } 50000$$

$$0.2 D - 0.1 L = 1000$$

$$D - L = 10000$$

$$D + L = 50000$$

Solving D = 20000

The answer is, " 20000"

