PROFIT AND LOSS

Students in last study notes we have discussed about percentage and now its turn of Profit and Loss.
In short we can say that profit and loss is advanced version of percentage where a buyer and seller comes in picture.
So lets start..

You have often heard that he ears a profit or he earned a loss I am pretty sure.
So what comes in your mind instantly?
Simply you think if he earned more than what he spend then it's a case of profit and if he earned less what he spent it's a case of loss.

So first of all we will discuss the importance of this chapter and then terminologies used.

Scope in exam-

Profit and loss is second pillar of math out of four(namely percentage, profit and loss, ratio and proportion and average).In pre exams 2-3
Word problems are asked directly and in DI section many times DI based on profit and loss are asked.(like income expenditure DI sets)

If we talk about mains exam same pattern is followed in word problem section and in data interpretation section its importance becomes more as some direct DI sets are asked in examination now a days specially in PO mains exams.
In short we can say that this is a section you can not leave for exams.

Profit and Loss terminologies-

1. **Cost Price (CP):**
The price, at which an article is purchased, is called its cost price, usually denoted by C.P.
In simple words we can say the money that goes out of the pocket of seller is added to its cost price.(like the price payed by seller to whole seller, transportation cost labour charges and different type of miscellaneous charges)
Sometimes it is denoted by expenditure.
2. **Selling Price (SP):**
The price, at which an article is sold, is called its selling prices, abbreviated as S.P.
In short we can say that the amount comes i9n pocket of seller is added to its selling price.
Sometimes it is denoted by income
3. **Marked Price:**
When we purchase any item or article we see that a price is marked on it and we pay same or ask for some discount, this price marked on it is known as marked price.
Sometimes it is denoted by labeled price or first price.
4. **Profit or Gain:**
If S.P. is greater than C.P., the seller is said to have a profit or gain.
or we can say if the seller got some where more what he spend then its case of profit.
5. **Loss:**
If S.P. is less than C.P., the seller is said to have incurred a loss.
or we can say if the seller got some where less what he spend then its case of loss.
6. Profit percentage = Profit percentage is sometimes calculated on CP and sometimes SP.
If profit percent is calculated on CP then

$$P\% = \frac{SP - CP}{CP} \times 100\%$$

If profit percent is calculated on SP then

$$P\% = \frac{SP - CP}{SP} \times 100\%$$

7. **Loss percentage=**Loss percentage is sometimes calculated on CP and sometimes SP.
If loss percent is calculated on CP then

$$P\% = \frac{CP - SP}{CP} \times 100\%$$

If loss percent is calculated on SP then

$$P\% = \frac{CP - SP}{SP} \times 100\%$$

8. **Markup price=**Usually seller mark the price of any article more than its cost price this percentage is called markup price. apercentage is sometimes calculated on CP and sometimes SP.

markup price= $\frac{MP - CP}{CP} \times 100\%$

9. **Discount percentage=**Usually seller give any article at some lower price than what written on it. This percentage decrease in price of an article is called discount.
Discount percent is always calculated on marked price

$$D\% = \frac{MP - SP}{MP} \times 100\%$$

Note-Sometimes discount is given by seller but not directly but in some conditional form like if you will buy 5 articles I will give you 1 article absolutely free this is also a case of discount.
How to calculate discount percent in these cases we will study ahead.

9. **Equivalent discount percent**=

When two successive discounts are given then equivalent discount may be calculated easily by this formula

Equivalent discount= $x + y - \frac{xy}{100}$

Points to Remember

- CP+Profit=SP
- CP-Profit=SP
- SP+Discount=M P
- If there is a PROFIT of x%, the calculating figures would be 100 and (100 + x).
- If there is a PROFIT of x%, the calculating figures would be 100 and (100 + x).
- Calculating figures be Cost Price and Selling Price respectively.

Now lets discuss some examples and then we will study some important formulae

1. A shopkeeper fixes the marked price of an item 35% above its cost price. The percentage of discount allowed to gain 8% is?
(1) 18% (2) 20% (C) 22%
(4) 24% (5) None of these
Answer: 2
Explanation:
Let the cost price = Rs.100/-
then, Marked price = Rs.135/-
Required gain = 8%,
So Selling price = Rs.108/-
Discount = 135 - 108 = 27

Discount% = $\frac{27}{135} \times 100\% = 20\%$

2. A person incurs a loss of 5% be selling a watch for Rs. 1140. At what price should the watch be sold to earn 5% profit?
(1) Rs.1200 (2) Rs.1230 (3) Rs.1260
(4) Rs.1290 (5) None of these
Answer: 3
Explanation:
Let CP=100
SP=95

New SP=105

Required answer= $\frac{1140}{95} \times 105 = 1260$

3. If the cost price of 12 bananas is equal to the selling price of 8 bananas, the gain percent is ?

(1) 12% (2) 50% (3) 30%

(4) 60% (5) None of these

Answer: 2

Explanation:

We know we will need gain amount to get gain percent, right. So lets get gain first.

Let the cost price of 1 banana is Re 1

Cost of 8 bananas = Rs 8

Selling price of 8 bananas= 12

Gain = 12 - 8 = 4

Gain%= $\frac{4}{8} \times 100\% = 50\%$

Now we will discuss further some examples-

Question 1:

A man buys a toy for Rs. 25 and sells it for Rs. 30. Find his gain/loss percentage.

Solution:

As we can see, the Cost Price is smaller than Selling Price; therefore the person must have had a profit on the total transaction. Therefore using the above mentioned formula

$$P\% = \frac{30-25}{25} \times 100\% = 20\%$$

Question 2:

When an article is sold at Rs. 910000, then the profit percentage amounts to 30%.Determine the Cost Price.

Solution:

When profit percentage is x%, in this case 30%,

Cost Price = 100

Selling Price = 100 + x = 100 + 30 = 130

The value of 130% is 910000,

So required cost price is

$$\frac{9100000}{130} \times 100 = 700000$$

Question 3

A man bought a cycle for Rs. 250. For how much should he sell it so as to gain 10%?

Solution:

As we have discussed above, the formula shows

Profit percentage = x% = 10%

Cost Price = 100

Selling Price = 100 + x = 100 + 10 = 110

Required answer= $\frac{250}{100} \times 110 = 275$

Question 4

Ram buys a watch for Rs. 500 and sells it to Shyam at 10% loss. Shyam then sells it to Ravi at 20% profit and Ravi sells it to Rakesh at 10% profit. How much did Rakesh pay for the watch?

Solution:

Rather than using the amount for calculation, use percentages to make it easier.

Let us consider that Ram spends 100 to buy the watch.

Ram buys watch at 100 and sells it to Shyam at 10% loss.

10% of 100 is 10. Therefore,

Cost Price for Ram = 100

Selling Price for Ram = 100 – (10% of 100 = 10) = 100 - 10 = 90

Cost Price for Shyam = 90

Selling Price for Shyam = 90 + (20% of 90 = 18) = 90 + 18 = 108

Cost Price for Ravi = 108

Selling Price for Ravi = 108 + (10% of 108 = 10.8) = 108 + 10.8 = 118.8

Cost Price for Rakesh = 118.8

The initial amount was Rs. 500 and the percentage we considered 100. So for final calculation, the equation becomes,

$$\frac{500}{100} \times 118.8 = 594$$

So, the amount Rakesh sent to buy the watch is Rs. 594.

Question 5

If a man purchases 11 oranges for Rs. 10 and sells 10 oranges for Rs. 11. How much profit or loss does he make?

Solution:

To make the calculations fast, let's discuss a quick method for this type of questions.

	Quantity	Price
Buying	11	10
Selling	10	11

Now what to do next??

I am telling you very important fact to solve this kind of question and you can explore more by yourself

Profit or loss percent can be calculated directly irrespective of number of articles but the condition is number of article should be same for both CP and SP.

So,

	Quantity	Price
Buying	110	100
Selling	110	121

Now required answer= $\frac{121-100}{100}\times 100\% = 21\%$

One more question will help you understand the process more clearly.

Question 6

A man purchases 8 pens for Rs. 9 and sells 9 pens for Rs. 8. How much profit or loss does he make?

Solution:

	Quantity	Price
Buying	8	9
Selling	9	8

Whats next??

Yes,make quantities equal

	Quantity	Price
Buying	72	81
Selling	72	64

As we can se here seller is selling things at lower cost than what he bought,so he will be in loss for sure.

Now loss perecent= $\frac{81-64}{81}\times 100 \approx 21\%$

Another type of question asked in examinations is a "dishonest dealer using false weight".

Question 7

A dishonest dealer professes to sell his goods at Cost Price, but he uses a weight of 960 gm for the kg weight. Find his gain percentage.

Solution:

Since the kg weight is of 1000 gm but the dealer uses only the 960 gm weight. Thus giving himself the profit of 1000 – 960 = 40 gm

Now lets make it more simple.

Let cost of 1 kg=1000

So the customer will give him 1000 Rs for 1 Kg right?

But what shopkeeper did? He gave only 960 grms means a product of 960 Rs.

In other he is getting 1000 Rs after spending 960 Rs.

So of course he will get a profit of Rs=1000-960=40 Rs

Now profit percent= $\frac{40}{960}\times 100\% \approx 4.17\%$

Question 8.

A dishonest dealer professes to sell his goods at a profit of 20% and also weighs 800 gm in place of a kg. Find his actual gain percentage?

Solution:

Here in this question shopkeeper is getting profit from two sides but don't worry we will make this question extremely easy for yoou.

Suppose 1 Kg=1000 Rs

So what customer will pay to him?

1000+200(profit)=1200

So shopkeeper should give him a product worth 1000 Rs but he is giving only 800 grams so CP=800

Now its very easy we have both CP and SP

So profit%= $\frac{1200-800}{800}\times 100\% = 50\%$

Question 9

A merchant professes to sell his goods at a loss of 10% but weighs 750 gm in place of a kg. Find his real loss or gain percentage?

Solution:

Again like last two questions

SP=900

CP=750

So its very clear that he is getting a gain.

Now gain percent= $\frac{900-750}{750}\times 100\% = 20\%$

One another type of question is "To find the cost price". Let's have a look at the type of question and the way to solve them.

Question 10

A man sells an article at 15% loss. If he had sold it for Rs. 450 more, he would have earned a profit of 10%. Find the cost price of this article.

Solution:

Man when sells the article at loss,

Loss percentage = x% = 15%

Cost Price = 100

Selling Price = 100 – x = 100 – 15 = 85

Now, if he sells the article to earn the profit of 10%,

Profit percentage = x% = 10%

Cost Price = 100

Selling Price = 100 + x = 100 + 10 = 110

The difference in Selling price = 110 – 85 = 25

Now, 25% = 450

And we need to determine the Cost Price which is 100%, So

Required answer= $\frac{450}{25}\times 100 = 1800$

This method can be remembered in the form of formula as:

$$\text{Cost} = \frac{\textit{More gain x 100}}{\textit{Difference in percentage}}$$

In this questions type, the cost price of the article remained same while the condition was associated with selling price. What if the condition mentioned in the question is associated with cost price along with the selling price. Let's take a question to explore the type.

Question 11

A person sells an article at a profit of 10%. If he had bought it at 10% less and sold it for Rs. 3 more, he would have gained 25%. Find the Cost Price?

Solution:

Let us start solving this similar to what we have been doing up until now.

Let us consider Cost Price of the article as 100%.

First profit percentage = x% = 10%

Cost Price = 100

Selling Price = 100 + x = 100 + 10 = 110

Next condition says that the Cost Price is reduced by 10%.

10% of intial Cost Price (100) = 10

Cost Price = 100 – 10 = 90

The line "he would have gained 25%" provides us with the profit percentage, when the cost price is 90.

25% of 90 = 22.5

Since there is a profit.

Cost Price + Profit = Selling Price

90 + 22.5 = 112.5

Let us make it visually easy for you to understand,

	CP	SP
First condition	100	110
Second condition	90	112.5

Now from data given in question|

Difference of SP 112.5-110=2.5=3

Now we have to find the cost price

So required answer= $\frac{3}{2.5}\times 100 = 120$

➞ So, the COST PRICE of the article is Rs. 120

Not to worry, go through the method one more time, you will understand it completely

Let us solve one more similar type of problem to make the process more clear to you and then leave you with a practice problem to work on the process by yourself.

Question 12

A man buys an article and sells it at a profit of 20%. If he had bought it at 20% less and sold it for Rs. 75 less, he would have gained 25%. What is the Cost Price of the article?

Solution:

Let us start solving this similar to our process in last question..

Let us consider Cost Price of the article as 100%.

First profit percentage = x% = 20%

Cost Price = 100

Selling Price = 100 + x = 100 + 20 = 120

Next condition says that the Cost Price is reduced by 20%.

20% of intial Cost Price (100) = 20

Cost Price = 100 – 20 = 80

Now we have to calculate profit

25% of 80 = 20

Since, there is a profit.

Cost Price + Profit = Selling Price

80 + 20 = 100

	CP	SP
First condition	100	120
Second condition	80	100

Now difference of SP is given in question itself

120-100=20=75

Required cost price= $\frac{75}{20}\times 100 = 375$

Question 13

Garima purchased a briefcase with an additional 10% discount on reduced price after deducting 20% on the Labelled Price. If the Labelled Price was Rs. 1400, then at what price did Garima purchase the briefcase?

Solution:

Let's make this question more easy

Consider, Labelled Price = 100

The salesperson had already announced the discount of 20% on the Labelled Price. So,

20% of Labelled Price (100) = 20

Selling Price = 100 – 20 = 80

But Garima got an additional 10% discount on the Selling Price which is 80 according to our calculation.

10% of Selling Price (80) = 8

Selling Price for Garima = Selling Price – additional discount

Selling Price for Garima = 80 – 8 = 72

The Labelled Price is provided to us as Rs. 1400, which is 100% and we need to find the Selling Price for Garima, which is 72%.

Therefore required answer= $\frac{1400}{100}\times 72 = 1008$

Now lets discuss something which we read in in this study notes

Effective discount= $20+10-\frac{20\times 10}{100} = 28$

So SP=(100-28)=72% of Marked price

Now required answer= $\frac{1400}{100}\times 72 = 1008$

Question 14

A tradesman marks his goods at 25% above his cost price and allows a discount of $12\frac{1}{2}\%$ for cash purchases. What profit does he make?

Solution:

Let CP=100

MP=125

SP=87.5% of 125=105

Now required answer= $\frac{105-100}{100}\times 100\% = 5\%$

Question 15

A person sells two fans for Rs. 3200. The cost price of 1st fan is equal to the selling price of 2nd fan. If the 1st fan is sold at 40% loss and the second fan is sold at 100% gain. Find his overall profit or loss amount?

Solution:

Total Selling Price of 2 fans = Rs. 3200

Cost Price of 1st fan = Selling Price of 2nd fan

Let us make a table to make it visually more clear,
Let CP of first fan=SP of second fan=100
Now, the 1st fan is sold at 40% loss
40% of Cost Price (100) = 40
Therefore,
Selling Price = 100 – 40 = 60
As of 2nd fan, 100% is gained. Now, if the Selling Price of the fan is Rs. 100 after 100% profit, the Cost Price must have been of 100 = 50
Let us check it again.
100% is gained.
Profit = 100% of Cost Price (50) = 50
Sellling Price = Cost Price + Profit
Selling Price = 50 + 50 = 100
Let us now, fill out the table.

First fan	
CP	SP
100	60
Second fan	
CP	SP
50	100

Total CP = 150
Total SP = 160
Since, the total Selling Price is greater than the total Cost Price, the person must have had the profit in the entire transaction. So,
Profit = Total SP – Total CP
Profit = 160 -150 = 10
Now from data given in question
160% = 3200
So 10% = 200

Some Important Concept

1. If a person sells two similar articles, one at a gain of a% and another at a loss of a%, then the seller always have a loss which is given by

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

don't afraid this formula came from successive concept and you can easily calculate it.

2. If a'th part of some items is sold at x% loss, then required gain per cent in selling rest of the items in order that there is neither gain nor loss in whole transaction, is $\frac{ax}{(1-a)}\%$

Example 1:
A shopkeeper purchased medicines worth Rs. 9000 form a company. He sold 1/3 part of the medicine at 30% loss. On which gain he should sell his rest of the medicines, so that he has neither gain or loss?
Here a = 1/3 , x = 30 %

Required gain % = $\frac{\frac{1}{3}\times 30}{\left(1-\frac{1}{3}\right)} = 15\%$

3. If cost price of 'a' articles is equal to the selling price of 'b' articles, then profit percentage can be directly calculated by

$$\frac{(a-b)}{b}\times 100\%$$

4. If a dishonest trader professes to sell his items at CP but uses false weight, then

Gain%= $\frac{E}{E-T}\times 100\%$

Where E=error

T=true value

Example 2:

A dishonest dealer professes to sell his goods at cost price but he uses a weight of 800 g for 900 grams weight. Find his gain per cent.

Now we can calculate his profit or gain percent directly

Gain % = $\frac{900-800}{800}\times 100\% = 12\frac{1}{2}\%$

5. If 'a' part of an article is sold at x% profit/loss, 'b' part at y% profit/loss and c part at z% profit/loss and finally there is a profit/lossof Rs.R, then Cost price of entire article

= $\frac{R}{ax+by+cz}\times 100$

Example 3:

If 2/3 part of an article is sold at 30% profit, 1/4 part at 16% profit and remaining part at 12% profit and finally, there is a profit of Rs.75, then find the cost price of the article.

Here a = 2/3 , x = 30 % , b =1/4 , y = 16 % , z = 12 % and R = 75 Rs

Required CP of article =

$$\frac{75}{\frac{2}{3}\times 30+\frac{1}{4}\times 16+\frac{1}{12}\times 12}\times 100 = 300$$

Some Formulae

- If an article is sold at a profit/gain of 30%, then S.P. = 130% of the C.P.
- If an article is sold at a loss of 20%, then S.P. = 80% of the C.P.
- When there are two successive Profit of x % and y % then the resultant profit per cent is given by

$$x+y+\frac{xy}{100}$$

- If there is a Profit of x% and loss of y % in a transaction, then the resultant profit or loss% is given by

$$x-y-\frac{xy}{100}$$

Note-

For profit use sign + in previous formula and for loss use – sign.

if resultant come + then there will be overall profit . if it come – then there will be overall loss.

- A man purchases a certain no. of article at m a rupee and the same no. at n a rupee. He mixes them together and sold them at p a rupee then his gain or loss %

$$\left[\frac{2mn}{(m+n)p}-1\right]\times 100$$

Note += profit ,- = loss

- If a seller marks his goods at x% above his cost price and allows purchasers a discount of y % for cash, then overall gain or loss

$$x-y-\frac{xy}{100}$$

Profit or loss according to sign .+ = gain, - = loss

Some examples based on concepts-

1. 33.33% of a commodity is sold at 15% profit,25% is sold at 20% profit and the rest at 24% profit. If the Total profit is Rs. 80 is earned then find the value of commodity?

(A) 350 B) 410 (C) 400

(D) 300 (E) None of these

Part sold at 24% profit = $1-\left(\frac{1}{3}+\frac{1}{4}\right)=\frac{5}{12}$

Value of commodity =

$$\frac{80\times 100}{\frac{1}{3}\times 15+\frac{1}{4}\times 20+\frac{5}{12}\times 24} = 400$$

2. A trader allows a Discount of 5% for cash payment. How much approx % above cost price must he mark his goods to make a profit of 10%?

(A) 8.9% (B) 10% (C) 12.75%

(D) 15.8% (E) None of these

$$10 = x - 5 - \frac{5x}{100}$$

$$\frac{19}{20}x = 15$$

$$x \simeq 15.8$$

3. The percentage profit earned by selling an article for Rs. 480 is equal to the percentage loss incurred by selling the same article for Rs. 240. At what price should the article be sold to make 20% profit?

(A) 432 (B) 400 (C) 500

(D) 480 (E) None of these

This question is easy as profit and loss both are same so CP will lie exactly between then

Let CP is x.

$$CP = \frac{480 + 240}{2} = 360$$

$$SP = \frac{120}{100} \times 360 = 432$$

4. Abhishek purchased 20 dozens of toys at the rate of Rs. 375 per dozen. He sold each one of them at the rate of Rs. 33. What was his percentage profit?

(A) 5.4 (B) 5.6 (C) 6.5

(D) 4.5 (E) None of these

Cost price of 1 Toy = 375/12= 31.25

Selling price of 1 toy = Rs.33

Profit= Rs (33-31.25) =1.75

$$\text{Profit\%} = \frac{1.75}{31.25} \times 100\% = 5.6\%$$

5. Some articles were bought at 7 articles for Rs. 6 and sold at 6 articles for Rs. 7. Gain percent is:

(A) 33.33% (B) 66.66% (C) 44%

(D) 50% (E) None of these

Lcm of 6 and 7 =42

Cost price of 42 articles= 36

Selling Price of 42 articles = 49

$$\text{\% profit} = \frac{49 - 36}{36} \times 100\% \approx 36.1\%$$

6. On selling 17 toys at Rs. 720, there is a loss equal to the cost price of 5 toys . The cost price of a Toy is:

(A) Rs. 50 (B) Rs. 60 (C) Rs. 65

(D) Rs. 70 (E) None of these

Cost price of 17 toys – Selling price of 17 toys = cost Price of 5 toys

Cost price of 12 toys = selling Price of 17 toys= 720

Cost price of 1 toy= $\frac{720}{12} = 60$

Now we will discuss different type of questions that may be asked in your examination-

Type 1:

The cost price of 40 articles is the same as the selling price of 25 articles. Find the gain per cent.

(a) 65% (b) 60%

(c) 15% (d) 75%

Answer: (b)

Gain per cent

$$\frac{40 - 25}{25} \times 100 = 60\%$$

Type 2:

Bananas are bought at the rate of 6 for Rs. 5 and sold at the rate of 5 for Rs. 6. Profit per cent is

(a) 36% (b) 42%

(c) 44% (d) 48%

Answer : (c)

To avoid fraction, let the number of bananas bought

LCM of 5 and 6 = 30

CP of 30 bananas

= 5×5 = Rs. 25

SP of 30 Bananas = 6× 6

= Rs. 36

Profit = Rs. (36-25) = Rs. 11

$$\text{Profit \%} = \frac{11}{25} \times 100\% = 44\%$$

Type 3:

A man bought oranges at the rate of 8 for Rs 34 and sold them at the rate of 12 for Rs. 57. How many oranges should be sold to earn a net profit of Rs 45?

(a) 90 (b) 100
(c) 135 (d) 150

Answers: (a)

Let the man buy 24 (LCM of 8 and 12) oranges.

C.P. of 24 oranges $= \frac{34}{8} \times 24 = 102$

S.P. of 24 oranges $= \frac{27}{12} \times 24 = 114$

Gain = 114 – 102 = Rs. 12

Rs. 12 = 24 oranges

Rs. 45 $= \frac{24}{12} \times 45 = 90$ oranges

Type 4:

A shopkeeper earns a profit of 12% on selling a book at 10% discount on printed price. The ratio of the cost price to printed price of the book is ?

(a) 45 : 56 (b) 50 : 61
(c) 90 : 97 (d) 99 : 125

Answer: (a)

C.P. of the book = Rs. x

Printed price = Rs. y

$$\frac{y \times 90}{100} = \frac{x \times 112}{100}$$

$$\frac{x}{y} = \frac{45}{56}$$

Type 5:

A dealer sold two types of goods for Rs 10,000 each. On one of them, he lost 20% and on the other he gained 20%. His gain or loss per cent in the entire transaction was

(a) 2% loss (b) 2% gain
(c) 4% gain (d) 4% loss

Answers: (d)

Here, S.P. is same, Hence there is always a loss. Loss per cent $= \frac{20 \times 20}{100} = 4\%$

Type 6:

On selling an article for Rs170, a shopkeeper loses 15%. In order to gain 20%, he must sell that article at rupees:

(a) 215.50 (b) 212.50
(c) 240 (d) 210

Answer : (c)

C.P. of article $= \frac{170}{85} \times 120 = 240$

Type 7:

An article is sold at a loss of 10%. Had it been sold for Rs. 9 more, there would have been a gain of 12.5% on it. The cost price of the article is

(a) Rs. 40 (b) Rs. 45
(c) Rs. 50 (d) Rs. 35

Answers:(a)

	CP	SP
Before	100	90
After	100	112.5

Now difference of SP 22.5%=9

So required answer=40

Type 8:

A sells a suitcase to B at 10% profit. B sells it to C at 30% profit. If C pays Rs 2860 for it, then the price at which a bought it is

(a) 1000 (b) 1600
(c) 2000 (d) 2500

Answer: (c)

If the C.P. of the suitcase for A be Rs. x, then

$$x \times \frac{110}{100} \times \frac{130}{100} = 2860$$

x= Rs. 2000

Type 9:

Arun marks up the computer he is selling by 20% profit and sells them at a discount of 15%. Arun's net gain percent is

(a) 4 (b) 2
(c) 3.5 (d) 2.5

Answer (b)

Required answer= $20 - 15 - \frac{20 \times 15}{100}$ = 20 -18 = 2%

Type10:

A tradesman sold an article at a loss of 20%. If the selling price had been increased by Rs. 100, there would have been a gain of 5%. The cost price of the article was:

(a) Rs. 200 (b) Rs. 25

(c) Rs. 400 (d) Rs. 250

Answer (c)

	CP	SP
Before	100	80
After	100	105

Now difference of SP

25% = Rx. 100

$$100\% = \frac{100\times100}{25} = 400$$

So dear students we have discussed almost all kind of questions which may be asked in your examination and we will discuss further in upcoming days.

Now its time for solved examples followed by unsolved questions whose solution will be provided in upcoming study notes quiz.

SOLVED PRACTICE EXERCISE

1. A Shopkeeper buys two bicycles for Rs. 750. He sells first bicycle at a profit of 22% and the second bicycle at a loss of 8%. What is the SP of first bicycle if in the whole transaction there is no profit no loss?

(1) Rs. 506 (2) Rs. 244 (3) Rs. 185

(4) Rs. 230 (5) None of these

Ans.(2)

CP of 1st bicycle =x Then CP of 2nd bicycle is 750-x.

$$\frac{122}{100}\times x+\frac{92}{100}\times(750-x)=750$$

$$x=200$$

$$\text{SP of 1st bicycle} = \frac{122}{100}\times200 = 244$$

2. The cost price of item B is Rs. 200/- more than the cost price of item A. Item A was sold at a profit of 20% and item B was sold at a loss of 30%. If the respective ratio of selling prices of items A and B is 6 : 7, what is the cost price of item B?

(1) Rs. 520 (2) Rs. 430 (3) Rs. 400

(4) Rs. 360 (5) None of these

Ans.(3)

Let the CP of item A be x

CP of item B is x+200.

$$\frac{\frac{120}{100}\times x}{(x+200)\times\frac{70}{100}}=\frac{6}{7}$$

x=Rs200.

CP of item B is 200+200 =Rs400.

3. A dealer offers a cash discount of 20% and still makes a profit of 20%, when he further allows 16 articles to a dozen to a particularly sticky bargainer. How much per cent above the cost price were his wares listed ?

(1) 100% (2) 80% (3) 75%

(4) 85% (5) None of these

Ans.(1)

$$\text{MP}=\frac{120}{\frac{80}{100}}=150$$

Now he is selling 16 goods in place of 12

$$\text{so his loss} = \frac{16-12}{16}\times100\% = 25\%$$

Then the actual MP =200

Hence, he has marked the MP 100% above the CP.

4. Profit earned by an organization is distributed among officers and clerks in the ratio of 5 : 3. If the number of officers is 55 and the number of clerks is 70 and the amount received by each officer is Rs12,000, what was the total amount of profit earned?

(1) Rs11 Lakh (2) Rs12.25Lakh (3) Rs10.56Lakh

(4) Rs16Lakh (5)None

Ans.(3)

The total amount distributed among 55 officers = Rs.55×12000 = Rs.6,60,000.

Their ratio 5:3

$$\text{Total profit} = \frac{660000}{5}\times8 = 10560000$$

5. The percentage profit earned by selling an article for Rs. 2120 is equal to the percentage loss incurred by selling

the same article for Rs. 1520. At what price should the article be sold to make 25% profit?

(1) Rs. 2275 (2) Rs. 2100 (3) Rs. 2650

(4) Rs. 2400 (5) None of these

Ans.(1)

The CP be 2120+1520=3640

CP=3640/2=1820.

SP= $1820 \times \frac{125}{100} = 2275$

6. If Joel sells an article at 4/5th of its selling price and secures a profit of 20%, what will be the profit or loss percentage if he sells it at the actual selling price?

(1) 45% (2) 60% (3) 50%

(4) 56% (5)None

Ans.(3)

Let CP is Rs100 Profit 20% Means ==> 120.

SP =150.

Then profit percentage is 50%

7. A shopkeeper sells Marker at the rate of Rs.35 each and earns a commission of 10%. He also sells Gel pen at the rate of Rs. 65 each and earns a commission of 20%. How much amount (in rupees) of commission will he earn in 2 weeks, if he sells 12 markers and 8 Gel pens a day?

(1) 2100 (2) 1850 (3) 2044

(4) 2680 (5)None

Ans.(3)

Commission for marker= $(35 \times 12) \times \frac{10}{100} = 42$

Commission for Gel pen = $(65 \times 8) \times \frac{20}{100} = 104$

Total Commission earned in 2 weeks is,

$(104 + 42) \times 14 = 2044$

8. A person sells two fans for Rs. 6800. The cost price of the first fan is equal to the selling price of the second fan. If the first is sold at 30% loss and the second at 100% gain, what is total profit or loss (in rupees)?

(1) 750 (2) 800 (3) 670

(4) 580 (5)None

Ans.(2)

Let the cp of 1st fan = sp of 2nd fan = Rs 100

∴ sp of 1st fan = 70(loss 30%)

Cp of 2nd fan = 50 (profit 100%)

Total cp = 100 + 50 = 150 and

total sp = 70 + 100 = 170

∴ When SP = 6800,

then CP = $\frac{150}{170} \times 6800 = 6000$

∴ Profit = 6800 – 6000 = 800

9. The ratio of cost price and marked price of an article is 2:3 and ratio of percentage profit and percentage discount is 3:2. What is the discount percentage ?

(1) 18.58% (2) 20.25% (3) 16.66%

(4) 22.13% (5)14.51%

Ans.(3)

CP : MP = 2x : 3x

=> profit = x profit % : discount % = 3 : 2

Let CP = 200 , SP = 300

But $\frac{3x}{100} \times 200 + \frac{2x}{100} \times 300 = 100$

100 => x = 8.33%

Discount 2x = 16.66%

10. Jagran group launched a new magazine in January 2004. The group printed 10000 copies initially for Rs. 50000. It distributed 20% of its stock freely as specimen copy and 25% of the rest magazines are sold at 25% discount and rest at 16.66% discount whose printing price was Rs. 12 per copy . What is the overall gain or loss in the first month's issue of magazine, if the magazine could not realize the income from advertisements or other resources?

(1) 56% (2) 62% (3) 74%

(4) 50% (5)68%

Ans.(1)

Total cost = Rs.50,000

Total sale price = 2000 × 9 + 6000 × 10 = 78,000

Profit% = $\frac{28000}{50000} \times 100\% = 56\%$

11. A and B are dealers of a bike company. The price of a bike is Rs.28,000. A gives a discount of 10% on whole , while B gives a discount of 12% on the first Rs.20,000 and 8% on the rest Rs.8000. What is the difference between their selling price?

(1) Rs.110 (2) Rs.180 (3) Rs.240

(4) Rs.200 (5)Rs.90

Ans.(3)

A’ s discount = 2800

B’s discount = 2400+640 = 3040

Required difference = 3040-2800 = Rs.240

12. Fanta and Coke, there are two companies, selling the packs of cold-drinks. For the same selling price Fanta gives two successive discounts of 10% and 25%. While Coke sells it by giving two successive discounts of 15% and 20%. What is the ratio of their marked price?

(1) 110:111 (2) 120:125 (3) 131:133

(4) 136:135 (5)140:141

Ans.(4)

Fanta×0.9×0.75= Coke ×0.85×0.80

Fanta/Coke = 136/135