PROFIT AND LOSS

IMPORTANT FACTS

COST PRICE: THE PRICE AT WHICH ARTICLE IS PURCHASED.ABBREVATED AS C.P.

SELLING PRICE: THE PRICE AT WHICH ARTICLE IS SOLD.

PROFIT OR GAIN:IF SP IS GREATER THAN CP,THE SELLING PRICE IS SAID TO HAVE PROFIT OR GAIN.

LOSS: IF SPIS LESS THAN CP,THE SELLER IS SAID TO INCURED A LOSS.

FORMULA

1.GAIN=(SP)-(CP). 2.LOSS=(CP)-(SP).
3.LOSS OR GAIN IS ALWAYS RECKONED ON CP
4. GAIN %={GAIN*100}/CP.
5.LOSS%={LOSS*100}/CP.
6.SP={(100+GAIN%) /100}*CP.
7.SP={(100-LOSS%)/100}*CP.
8.{100/(100+GAIN%)} *SP
9.CP=100/(100-LOSS%)}*SP
10.IF THE ARTICLE IS SOLD AT A GAIN OF SAY 35%, THEN SP =135% OF CP
11.IFA ARTICLE IS SOLD AT A LOSS OF SAY 35%. THEN SP=65% OF CP.
12.WHEN A PERSON SELLS TWO ITEMS,ONE AT A GAIN OF X% AND OTHER AT A LOSS OF X%.THEN THE SELLER ALWAYS INCURES A LOSS GIVEN:
{LOSS%=(COMON LOSS AND GAIN)^2}/10.=(X/10)^2
13.IF THE TRADER PROFESSES TO SELL HIS GOODS AT CP BUT USES FALSE WEIGHTS,THEN
GAIN=[ERROR/(TRUE VALUE)-(ERROR)*100]%

SOLVED PROBLEMS

ex.1 A man buys an article for rs.27.50 and sells it for rs.28.50. find his gain %.

sol. cp=rs27.50, sp=rs 28.50
gain=rs(28.50 –27.50)=rs1.10
so gain%={(1.10/27.50)*100}=4%

Ex.2. If the a radio is sold for rs 490 and sold for rs 465.50.find loss%.

sol. cp=rs490,sp= 465.50.
loss=rs(490-465.50)=rs 24.50.
loss%=[(24.50/490)*100]%=5%

Ex.3.find S.P when

(i)CP=56.25,gain=20%.
sol.
(i)SP =20% of rs56.25 ,=rs{(120/100)*56.25}=rs67.50.

(ii)CP=rs 80.40,loss=5%
sol: sp=85% of rs 80.40
=rs {(85/100)*80.40}=rs 68.34.

ex.4 find cp when:

(i) sp =rs 40.60 : gain=16%
(ii) sp=rs51.70:loss=12%

(i) cp=rs{(100/116)*40.60}=rs 35.
(ii) cp=rs{(100/88)*51.87}=rs58.75.

ex.5 A person incures loss for by selling a watch for rs1140.at what price should the

watch be sold to earn a 5% profit ?

sol. let the new sp be rsx.then

(100-loss%) : (1^{st} sp)=(100+gain%) ($\underline{2^{nd}\ sp}$)

⇨ {(100-5)/1400}={(100+5)/x}=> x={(105*1140)/95} =1260.

⇨

ex.6 A book was sold for rs 27.50 with a profit of 10%. if it were sold for rs25.75, then what would be % of profit or loss?

sol. SP=rs 27.50: profit =10%.
sol. CP=rs {(100/110)*27.50}=rs 25.

When sp =Rs25.75 ,profit =Rs(25.75-25)=Rs 0.75

Profit%={(0.75/25)*100}%=25/6%=3%

Ex7 .If the cost price is 96% of sp then whqt is the profit %

Sol. sp=Rs100 : then cp=Rs 96:profit =Rs 4.

Profit={(4/96)*100}%=4.17%

Ex.8. Thecp of 21 articles is equal to sp of 18 articles.find gain or loss %

CP of each article be Rs 1

CP of 18 articles =Rs18 ,sp of 18 articles =Rs 21.

Gain%=[(3/18)*100]%=50/3%

Ex.9 By selling 33 metres of cloth , one gains the selling price of 11 metres . Find the gain percent .

Sol:

(SP of 33m)-(CP of 33m)=Gain=SP of 11m

SP of 22m = CP of 33m

Let CP of each metre be Re.1 , Then, CP of 22m= Rs.22,SP of 22m=Rs.33.

Gain%=[(11/22)*100]%=50%

Ex10 A vendor bought bananas at 6 for Rs.10 and sold them at Rs.4 for Rs.6 .Find his

gain or loss percent .

Sol:

Suppose , number of bananas bought = LCM of 6 and 4=12

CP=Rs.[(10/6)*12]=Rs.20 ; SP= Rs[(6/4)*12]=Rs.18

Loss%=[(2/20)*100]%=10%

Ex.11. A man brought toffees at for a rupee. How many for a rupee must he sell to gain 50%?

Sol. C.P of 3 toffees=Re 1; S.P of 3 toffees =150% of Re.1=3/2.

For Rs.3/2, toffees sold =3, for Re.1, toffees sold = [3*(2/3)] = 2.

Ex. 12.A grocer purchased 80 kg of sugar at Rs.13.50 per kg and mixed it with 120kg sugar at Rs.16per kg. At what rate should he sell the mixer to gain 16%?

Sol .C.P of 200 kg of mixture = Rs. (80 * 13.50+120*16) = Rs.3000.

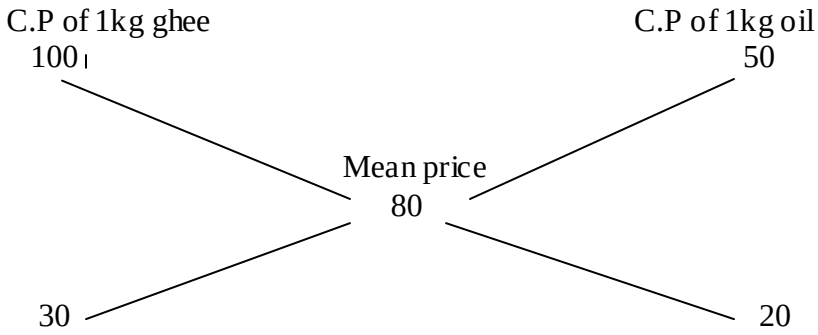
S.P =116% 0f Rs.3000 =Rs.[(116/200) *3000]=Rs.3480.

∴ Rate of S.P of the mixture =Rs.[3480/200] per kg =Rs.17.40 per kg.

Ex.13. Pure ghee cost Rs.100 per kg. After adulterating it with vegetable oil costing Rs.50 per kg, A shopkeeper sells the mixture at the rate of Rs.96 per kg, thereby making a profit of 20%.In What ratio does he mix the two?

Sol. Mean cost price =Rs. [(100/120)*96] =Rs.80 per kg.

By the rate of allegation :



∴ Required ratio =30:20 =3:2.

Ex. 14. A dishonest dealer professes to sell his goods at cost price but uses a weight of 960 gms for a kg weight . Find his gain percent.

Sol .Gain% =[Error *100]% = [(40/960)*100] % = 4 1 %
(error value)-(error) 6

Ex 15. If the manufacturer gains 10%,the wholesale dealer 15% and the retailer 25% ,then find the cost of production of a ,the retail price of which is Rs.1265?

Sol:

Let the cost of production of the table be Rs x

The ,125% of 115% of 110% of x=1265

⇨ 125/100*115/100*110/100*x=1265=>253/160*x=>1265=>x=(1265*160/253) =Rs.800

Ex16 . Monika purchesed a pressure cooker at 9/10th of its selling price and sold it at 8% more than its S.P .find her gain percent.

Sol:

Let the s.p be Rs. X .then C.P = Rs.9x/10,Receipt=108% of rs.x=Rs 27x/25

Gain=Rs (27x/25*9x/10)=Rs(108x-90x/100)=Rs18x/100

Gain%=(18x/100*10/9x*100)%=20%

Ex .17 An article is sold at certain price. By selling it at 2/3 of its price one losses 10%,find the gain at original price ?

sol:

let the original s.p be Rs x. then now S.P=Rs2x/3,loss=10%

now C.P=Rs20x/27*27/20x*100)%=35%

Ex .18. A tradesman sold an article at a loss of 20%.if the selling price has been increased by Rs100,ther would have been a gain of 5%.what was the cost price of the article?

Sol:

Let C.P be Rs x. then (105% of x)-(80 % of x)=100 or 25% of x=100

⇨ x/4=100 or x=400

⇨ so,C.P =Rs 400

Ex 19. A man sells an article at a profit of 25%if he had bought it 20% less and sold it for Rs 10.50 less,he would have gained 30%find the cost price of the article.

Sol:

Let the C.P be Rs x

1^{st} S.P=125% of x =125x/100=5x/4;2^{nd} S.P=80% of x=80x/100=4x/5

2^{nd} S.P=130% of 4x/5=(130/100*4x/5)=26x/25

=>5x/4-26x/25=10.50⇔x=(10.50*100)/21=50

hence C.P=Rs.50

Ex 20.The price of the jewel,passing through three hands,rises on the whole by65%.if the first and the second sellers 20%and25% profit respectively find the percentage profit earned by the third seller.

Sol:

Let the orginal price of the jewel be Rs p and let the profit earned by the thrid seller be x%

Then,(100+x)% of 125% OF 120% OF P=165% OF P

⇨ ((100+X)/100*125/100*120/100*P)=(165/100*P)

⇨ (100+X)=(165*100*100)/(125*120)=110=>X=10%

Ex21 .A man 2 flats for Rs 675958 each.on one he gains 16% while on the other he losses 16%. How much does he gain/loss in the whole transaction?

Sol:

In this case there will be alwalys loss. The selling price is immaterial

Hence, loss % = (common loss and gain%)^2 /10=(16/10)%=(64/25)%=2.56%

Ex.22. A dealer sold three-fourth of his article at a gain of 20% and remaining at a cost price. Find the gain earned by him at the two transcation.

Sol:

Let the C.P of the whole be Rs x

C.P of 3/4th =Rs 3x/4,C.P of 1/4th =Rs x/4

⇨ total S.P=Rs [(120%of 3x/4)+x/4]=Rs(9x/10+x/4)=Rs 23x/20

⇨ gain=Rs(23x/20-x)=Rs 3x/20

⇨ gain%=3x/20*1/x*100)%=15%

Ex 23 ..A man bought a horse and a car riage for Rs 3000.he sold the horse at a gain of 20% and the carriage at a loss of 10%,thereby gaining 2% on the whole.find the cost of the horse.

Sol:

Let the C.p of the horse be Rs.x, then C.P of the carriage =Rs(3000-x)

20% of x-10% of(3000-x)=2% of 3000

⇨ x/5-(3000-x)/10=60=.2x-3000+x=600=.3x+3600=>x=1200

⇨ hence,C.P of the horse =Rs 1200

Ex 24 find the single discount equivalent to a series discount of 20% ,10% and 5%'

sol:

let the marked price be Rs 100

then ,net S.P=95% of 90% of 80% of Rs 100

=Rs(95/100*90/100*80/100*100)=Rs68.40

Ex .25 After getting 2 successive discounts, a shirt with a list price of Rs 150 is available at Rs 105. If the second discount is 12.55,find the first discount.

Sol:

Let the first discount be x%

Then,87.5% of (100-x)% of 150= 105

⇨ 87.5/100*(100-x)/100*450=150=>105=>100-x=(105*100*100)/(150*87.5)=80

⇨ x=(100-80)=20

⇨ first discount = 20%

Ex .26 An uneducated retailar marks all its goods at 50% above the cost price and thinking that he will still make 25% profit,offers a discount of 25% on the markedprice.what is the actual profit on the sales?

Sol:

Let C.P =Rs100.then ,marked price =Rs100

S.P=75% of Rs 150=Rs112.50

Hence,gain%=12.50%

Ex27 .A retailer buys 40 pens at the market price of 36 pens from a wholesaler ,if he sells these pens giving a discount of 1% ,what is the profit % ?

sol:

let the market price of each pen be Rs 1

then,C.P of 40 pens = Rs 36 S.P of 40 pens =99% of Rs 40=Rs 39.60

profit %=((3.60*100)/36) %=10%

Ex 28 . At what % above C.P must an article be marked so as to gain 33% after allowing a customer a discount of 5%?

Sol

Let C.P be Rs 100.then S.P be Rs 133

Let the market price be Rs x

Then 90% of x=133=>95x/100=133=>x=(133*100/95)=140

Market price = 40% above C.P

Ex .29 . When a producer allows 36% commission on retail price of his product, he earns a profit of 8.8%. what would be his profit % if the commision is reduced by 24%?

Sol:

Let the retail price =Rs 100.then, commission=Rs 36

S.P=Rs(100-36)=Rs 64

But, profit=8.8%

C.P=Rs(100/108.8*64)=Rs 1000/17

New commission =Rs12. New S.P=Rs(100-12)Rs 88

Gain=Rs(88-1000/17)=Rs 496/17

Gain%=(496/17*17/1000*100)%=49.6%