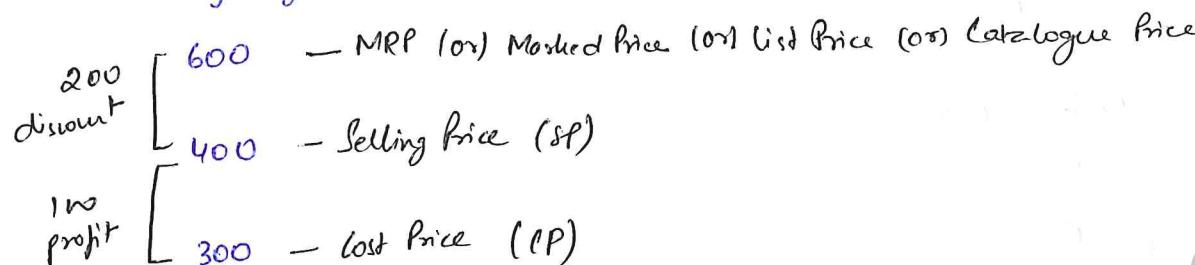


8.1: Profit and Loss Introduction

Price of bag



$$SP - CP = \text{Profit}$$

$$\text{Profit \%} = \frac{\text{Profit}}{CP} \times 100 \quad (\text{Profit is calculated on CP})$$

$$\text{Loss \%} = \frac{\text{Loss}}{CP} \times 100$$

To find SP

↳ find profit

↳ then add to CP

$$SP = CP + \text{Profit} \quad (\text{or}) \quad SP = CP + \text{Loss}$$

$$= CP + \frac{\text{Profit \%}}{100} \times CP$$

$$= CP \left(1 + \frac{P\%}{100} \right) = CP \left(\frac{100 + P\%}{100} \right)$$

$$SP = CP \left(\frac{100 + P\%}{100} \right)$$

$$\text{or} \quad SP = CP \left(\frac{100 - L\%}{100} \right)$$

Note:- SP is also calculated on CP.

$$\text{Discount \%} = \frac{\text{Discount}}{\text{Marked Price (MP)}} \times 100$$

$$S.P. \text{ (when MP \& discount is given)} = MP - \text{discount}$$

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

$$= MP \left(1 - \frac{d\%}{100} \right)$$

$$= MP \left(\frac{100 - d\%}{100} \right)$$

SP is also calculated on MP.

Discount is always calculated on MP.

Ex
Let $CP = 1200$, $SP = 1500$, $MP = 1800$, find Profit % & discount %?

$$\text{Profit \%} = \frac{\text{Profit}}{CP} \times 100$$

$$\begin{aligned}\text{Profit} &= SP - CP \\ &= 1500 - 1200 \\ &= 300\end{aligned}$$

$$\begin{aligned}\text{Profit \%} &= \frac{300}{1200} \times 100 \\ &= 25\%\end{aligned}$$

$$\text{Discount \%} = \frac{\text{Discount}}{MP} \times 100$$

$$\begin{aligned}\text{Discount} &= MP - SP \\ &= 1800 - 1500 \\ &= 300\end{aligned}$$

$$\begin{aligned}\text{Discount \%} &= \frac{300}{1800} \times 100 \\ &= 16 \frac{2}{3}\%\end{aligned}$$

How we calculate CP or SP (i) In terms of %

(ii) in terms of value.

(1) In terms of %

$CP = 100\%$ (\because CP is original value)

$\text{Profit} = 20\%$

$$\begin{aligned}SP &= 100\% + 20\% \quad (\text{CP} + P) \\ &= 120\%\end{aligned}$$

Ex Profit = 15%, find SP.

$$SP = 115\%$$

Ex Loss = 30%, find SP

$$SP = 70\%$$

Ex Profit = 12.5%, find SP

$$SP = 112.5\%$$

(2) In terms of ratio

$$\text{Profit} = 20\% = \frac{1}{5} \xrightarrow{\text{Result}} \text{original value}$$

$$CP = 5$$

$$\text{Profit} = 1$$

$$SP = 5+1 = 6$$

$$\therefore SP: CP = 6:5$$

$$\text{Ex} \quad \text{Profit} = 12.5\% = \frac{1}{8}$$

$$CP = 8, \text{ Profit} = 1$$

$$SP = 8+1 = 9.$$

$$\text{Ex} \quad \text{Profit} = 83\frac{1}{3}\% = \frac{5}{6}$$

$$CP = 6, \text{ Profit} = 5, \quad SP = \frac{5+6}{6} = 11$$

$$\text{Ex} \quad \text{Loss} = 33\frac{1}{3}\% = \frac{1}{3}$$

$$CP = 3, \text{ Loss} = 1, \quad SP = 3-1 = 2$$

Ex

$$\text{discount \%} = 20\%$$

$$SP \% = 80\%$$

$$\text{discount} = 1/5$$

$$MP = 5, \text{ discount} = 1$$

$$SP = 5 - 1 = 4$$

Ex

$$\text{Profit \%} = 20\% \\ = 1/5$$

$$CP = 5$$

$$P = 1$$

$$SP = 5 + 1 = 6$$

Ex

$$\text{discount} = 16\frac{2}{3}\%$$

$$SP \% = 83\frac{1}{2}\%$$

$$\therefore \text{discount} = 1/6$$

$$MP = 6$$

$$\text{discount} = 1$$

$$SP = 6 - 1 = 5$$

8.2 : Problems on Profit & loss

Q.1) Find the cost price of an article which is sold at ₹ 300 at a loss of 25%?

Concept 1 $SP = 300, \text{loss \%} = 25\%$

$$SP = CP \times \left(\frac{100 - \text{Loss \%}}{100} \right)$$

$$300 = CP \times \frac{75}{100}$$

$$CP = \frac{300 \times 100}{75}$$

$$= ₹ 400$$

Concept 2

$$\text{loss \%} = 25\%$$

$$SP \% = 75\%$$

$$75\% \longrightarrow 300$$

$$100\% \longrightarrow \frac{300 \times 100}{75}$$

$$= ₹ 400 = CP$$

Concept 3

$$\text{loss \%} = 25\% = \frac{1}{4}$$

$$CP = 4, \text{loss} = 1$$

$$SP = 4 - 1 = 3$$

$$3 \longrightarrow 300$$

$$4 \longrightarrow \frac{300}{3} \times 4$$

$$= ₹ 400/- CP$$

Q.2) The cost price of an article is ₹ 560 and sold at a profit of 12.5%.
find the selling price?

$$CP = ₹ 560$$

$$\text{Profit \%} = 12.5\%$$

$$SP = CP \times \left(\frac{100 + \text{Profit \%}}{100} \right)$$

$$= 560 \times \frac{112.5}{100}$$

$$= ₹ 630$$

(Alternative)

$$CP = ₹ 560$$

$$\text{Profit \%} = 12.5\%$$

$$\text{Profit} = 12.5\% \times CP$$

$$= \frac{1}{8} \times 560$$

$$= ₹ 70$$

$$SP = 560 + 70$$

$$= ₹ 630$$

(Alternative)

$$\text{Profit \%} = 12.5\%$$

$$= \frac{1}{8}$$

$$CP = 8, \quad \text{Profit} = 1$$

$$SP = 9$$

$$8 \longrightarrow 560$$

$$9 \longrightarrow \frac{560 \times 9}{8} = ₹ 630/-$$

Q.3) A man buys a cycle of ₹ 1,400 and sells it at loss of 15%. What is the selling price of the cycle?

Concept 1

$$\text{Loss \%} = 15\%$$

$$87\% = 87\%$$

$$CP = ₹ 1,400$$

$$100\% \rightarrow 1400$$

$$87\% \rightarrow \frac{1400 \times 87}{100}$$

$$= ₹ 1190$$

Concept 2

$$\text{Loss \%} = 15\% = \frac{3}{20}$$

$$CP = 20, \text{ Loss} = 3$$

$$SP = 20 - 3 = 17$$

$$20 \rightarrow 1400$$

$$17 \rightarrow \frac{1400 \times 17}{20}$$

$$= ₹ 1190$$

Q.4) A retailer buys a radio for ₹ 225. His overhead expenses are ₹ 15. He sells the radio for ₹ 300. The profit% of the retailer is:

$$CP = ₹ 225$$

$$\begin{array}{r} (+) \text{Exp} = 15 \\ \hline \text{Total CP} = ₹ 240 \end{array}$$

$$SP = ₹ 300$$

$$\begin{aligned} \text{Profit} &= ₹ 300 - ₹ 240 \\ &= ₹ 60 \end{aligned}$$

$$\begin{aligned} \text{Profit \%} &= \frac{60}{240} \times 100 \\ &= 25\% \end{aligned}$$

Q.5) A merchant buys an article for ₹ 27 and sells it a profit of 10% of the selling price. The selling price of the article is:

Profit = 10% of the selling price

$$CP = 27$$

$$\text{Let } SP = 100$$

$$\begin{aligned} \text{Profit} &= 10\% \times 100 \\ &= 10 \end{aligned}$$

$$\begin{aligned} CP &= SP - P \\ &= 100 - 10 \\ &= ₹ 90 \end{aligned}$$

$$90 \rightarrow 27$$

$$\begin{aligned} 100 &\rightarrow \frac{27}{90} \times 100 \\ &= ₹ 30/- \end{aligned}$$

(Alternative)

$$\text{Profit \%} = 10\% = \frac{1}{10}$$

$$SP = 10$$

$$\text{Profit} = 1$$

$$CP = 10 - 1 = 9$$

$$9 \rightarrow 27$$

$$10 \rightarrow \frac{27}{9} \times 10 = ₹ 30/- (SP)$$

Q.6) If an article is sold at 5% gain instead of 5% loss, the man gains ₹ 5 more. Find the CP of that article?

$$\text{Let } CP = ₹ 100$$

Sold at 5% loss

$$\text{Loss} = ₹ 5$$

$$SP = ₹ 100 - ₹ 5 \\ = ₹ 95$$

Sold at 5% gain

$$\text{Profit} = ₹ 5$$

$$SP = ₹ 105$$

$$\begin{array}{ccc}
 \frac{CP}{100} & & \frac{SP}{95} \\
 100 & & 95 \rightarrow 10 \\
 100 & & 105 \\
 \\
 10 & \xrightarrow{5} & \\
 100 & \xrightarrow{\frac{5}{10} \times 100} & \\
 & = ₹ 501 - (CP) &
 \end{array}$$

(Alternative)

$$5\% \text{ gain}, SP_1 = 105\%$$

$$5\% \text{ loss}, SP_2 = 95\%$$

$$SP_1 - SP_2 = ₹ 10.$$

$$10\% \rightarrow 5$$

$$100\% \rightarrow \frac{5}{10} \times 100 \\ = ₹ 501 - (CP)$$

Q.7) If a man were to sell his chair for ₹ 720, he would lose 25%. To gain 25%, he should sell it for?

$$\text{Loss} = 25\%$$

$$SP = ?$$

$$25\% \rightarrow 720$$

$$100\% \rightarrow \frac{720}{75} \times 100 \\ = ₹ 960$$

$$CP = ₹ 960$$

$$\text{Profit \%} = 25\%$$

$$SP = CP + \text{Profit}$$

$$\text{Profit} = \frac{25}{100} \times 960 = ₹ 240$$

$$SP = 960 + 240$$

$$= ₹ 1200$$

(Alternative)

$$\text{Loss} = 25\% \quad SP\% = 75\%$$

$$(\text{Gain} = 25\%, SP\% = 125\%)$$

$$75\% \rightarrow 720 \\ 125\% \rightarrow \frac{720}{75} \times 125 \\ = ₹ 1200 \quad (SP)$$

Q.8) The cost price of 36 books is equal to the SP of 30 books. The gain or loss % is:

$$36 \times CP = 30 \times SP$$

$$\frac{CP}{SP} = \frac{30}{36} \Rightarrow \frac{5}{6}$$

$$\text{Gain} = 36 - 30 = 6$$

$$\begin{aligned}\text{Gain \%} &= \frac{6}{30} \times 100 \\ &= 20\%.\end{aligned}$$

Q.9) If the cost price of 15 tables be equal to the SP of 20 tables. The loss % is:

$$15 \times CP = 20 \times SP$$

$$\frac{CP}{SP} = \frac{20}{15}$$

$$\begin{aligned}\text{Loss} &= 20 - 15 \\ &= 5\end{aligned}$$

$$\begin{aligned}\text{Loss \%} &= \frac{5}{20} \times 100 \\ &= 25\%\end{aligned}$$

Q.10) Ravi buys some coffees at 2 for a rupee and sells them at 5 for his loss or gain % is:

Buy 2 @ ₹ 1/-
Sld 5 @ ₹ 1/-

∴ Buys 10 @ ₹ 5/-
Sld 10 @ ₹ 2/-
∴ Loss = ₹ 3

$$\text{Loss \%} = \frac{3}{5} \times 100 = 60\%.$$

Q.11 By selling 120 hens Mahesh suffered a loss equal to the CP of 6 hens. His loss% is

$$CP \text{ of 1 hen} = ₹ 1$$

$$CP \text{ of 120 hens} = ₹ 120$$

$$\text{Loss} = 6/-$$

$$\begin{aligned} \text{Loss \%} &= \frac{6}{120} \times 100 \\ &= 5\% \end{aligned}$$

Q.12 A cloth merchant on selling 33 meters of cloth obtained a profit equal to the selling price of 11 meter of cloth. The profit% or loss% is:

$$\text{Profit} = SP \text{ of 11 metre}$$

$$SP \text{ of 1 metre} = ₹ 1$$

$$SP \text{ of 33 metres} = ₹ 33$$

$$\text{Profit} = ₹ 11/-$$

$$\begin{aligned} CP &= ₹ 33 - ₹ 11 \\ &= ₹ 22 \end{aligned}$$

$$\begin{aligned} \text{Profit \%} &\rightarrow \frac{11}{22} \times 100 \\ &= 50\%. \end{aligned}$$

Q.13 A business man bought an article and sold it at a loss of 5%. If he had bought it for 10% less and sold it for ₹ 3 more, he would have had a profit of 30%. The cost price of an article is:

$$CP = ₹ 100$$

$$\text{Loss} = ₹ 5$$

$$SP_1 = ₹ 95$$

$$SP_2 - SP_1 \rightarrow 117 - 95 = 22$$

$$\begin{array}{c} \text{If } 10\% \text{ less} \\ \hline CP = ₹ 90 \end{array}$$

$$\text{Profit} = 30\%.$$

$$\text{Profit} = 90 \times 30\% = ₹ 27$$

$$SP_2 = 90 + 27 = 117$$

$$\begin{array}{rcl} \therefore 22 & \longrightarrow & 33 \\ 100 & \longrightarrow & \frac{33}{22} \times 100 = ₹ 150/- (\text{OP}) \end{array}$$

Q.14 A dealer sells two scooters, one at a profit of 15% and other at a loss of 15%. The selling price of the both the scooters is the same, the gain or loss % in the transaction is:

SP is same.

Profit % and loss % are same.

In this case, you get always loss

$$\text{Overall loss \%} = \frac{\text{Profit \%} \times \text{loss \%}}{100}$$

$$\text{Overall loss \%} = \frac{15 \times 15}{100}$$

$$= 2.25\%$$

Q.15 A horse and a cow were sold at ₹ 12000 each. The horse was sold at a loss of 20%, and the cow at a gain of 20%. Then the entire transaction resulted (in ₹).

$$\begin{aligned} \text{SP of horse} &= ₹ 12000 \\ \text{SP of cow} &= ₹ 12000 \end{aligned} \quad \left. \begin{array}{l} \text{SP are} \\ \text{same} \end{array} \right\}$$

$$\text{Loss \%} = 20\% \quad \left. \begin{array}{l} \text{both are same} \end{array} \right\}$$

$$\text{Profit \%} = 20\%$$

$$\text{Overall loss \%} = \frac{\text{Profit \%} \times \text{loss \%}}{100}$$

$$= \frac{20\% \times 20\%}{100}$$

$$= 4\%$$

$$\text{SP \%} = 96\%$$

$$96 \rightarrow ₹ 40000$$

$$4 \rightarrow \frac{24000}{96} \times 4$$

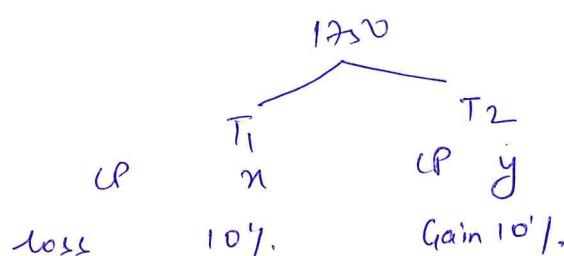
$$= ₹ 10001 - (\underline{\text{loss}})$$

Q.16} A man buys two tables for ₹ 1,750. He sells one at loss of 10% and other at a gain of 15%. On the whole he neither gains nor losses. What does each table cost?

$$\text{Cost of } T_1 \text{ and } T_2 = ₹ 1,750 -$$

let cost of T_1 be x

and cost of T_2 be y



∴ neither gain nor loss

$$\therefore SP = ₹ 1,750 -$$

∴ Profit = loss

$$15\% \text{ of } y = 10\% \text{ of } x$$

$$\Rightarrow \frac{y}{x} = \frac{15}{10} = \frac{3}{2}$$

$$\begin{array}{c}
 1750 \\
 \diagdown \quad \diagup \\
 3 \quad : \quad 2 \\
 3/5 \times 1750 \\
 = ₹ 1050 \quad (\text{CP}) \\
 2/5 \times 1750 \\
 = ₹ 700 \quad (\text{UP})
 \end{array}$$

8.3: Problems on Profit & loss

Relationship between MP and CP

$$SP = CP \left(\frac{100 + P\%}{100} \right)$$

$$SP = MP \left(\frac{100 - d\%}{100} \right)$$

$$\therefore MP \left(\frac{100 - d\%}{100} \right) = CP \left(\frac{100 + P\%}{100} \right)$$

$$\Rightarrow \frac{MP}{CP} = \frac{100 + P\%}{100 - d\%} \quad (\text{in terms of } \%)$$

In terms of fractions

$$\frac{MP}{CP} = \frac{1 + P}{1 - d}$$

Q.17 The cost price of an article is ₹ 800. After allowing a discount of 10%, a gain of 12.5% was made. Then the marked price of an article is.

$$CP = ₹ 800, \text{ discount } (d) = 10\%, \text{ Profit } (P) = 12.5\%$$

$$SP = CP + P = 800 + (12.5\% \times 800) = ₹ 900$$

$$MP = SP + d = 900 + (10\% \times MP)$$

$$\Rightarrow \frac{9}{10} MP = 900$$

$$\Rightarrow MP = ₹ 1,000/-$$

(Alternative)

$$\frac{MP}{CP} = \frac{100\% + P\%}{100\% - d\%}$$

$$\therefore \frac{MP}{CP} = \frac{112.5}{90} = \frac{1125}{900} = \frac{45}{36} = \frac{5}{4}$$

$$\Rightarrow MP : CP = 5 : 4$$

$$4 \rightarrow 800$$

$$5 \rightarrow \frac{800}{4} \times 5 = ₹ 1,000/- (MP)$$

(Alternative)

$$\frac{MP}{CP} = \frac{1+p}{1-d}$$

$$p\% = 12.5\% = \frac{1}{8}$$

$$d\% = 10\% = \frac{1}{10}$$

$$\therefore \frac{MP}{CP} = \frac{1 + \frac{1}{8}}{1 - \frac{1}{10}}$$

$$\Rightarrow \frac{MP}{800} = \frac{\frac{9}{8}}{\frac{9}{10}}$$

$$\Rightarrow \frac{MP}{800} = \frac{10}{8}$$

$$\Rightarrow 8MP = 10 \times 800$$

$$\Rightarrow MP = ₹ 1000/-$$

Q.2) At what % above the cost price, must a shopkeeper marks his goods so that he gains 20% even after giving a discount of 10% on the MP?

$$\frac{MP}{CP} = \frac{100\% + p\%}{100\% - d\%} = \frac{120}{90}$$

$$MP - CP = 120 - 90 = 30$$

$$\text{Marked \% above CP} = \frac{30}{90} \times 100 = 33 \frac{1}{3}\% \quad (\text{Ans})$$

Q.3) The marked price of an article is 10% higher than C.P. A discount of 10% is given on marked price. In this kind of sale, the seller gets?

Let CP be ₹100.

Then MP will be ₹110.

Discount @ 10% = ₹11

$$\therefore SP = ₹110 - ₹11 = ₹99$$

$$\therefore \text{Loss} = 100 - 99 = ₹1$$

$$\begin{aligned}\text{Hence Loss \%} &= \frac{1}{100} \times 100 \\ &= 1\%\end{aligned}$$

Concept of Successive Discounts

$$MRP = ₹500/-$$

$$\text{Discount @ } 20\% = \frac{₹100/-}{₹400/-}$$

$$\text{Discount @ } 10\% = \frac{₹40/-}{₹360/-}$$

$$\text{Total Discount} = ₹140$$

$$\therefore \text{Discount \%} = \frac{140}{500} \times 100 \\ = 28\%$$

Two discounts are given $x\%$ and $y\%$.
Single equivalent discount $\Rightarrow x+y - \frac{xy}{100}$

$$\text{Ex} \quad 20+10 - \frac{20 \times 10}{100} \Rightarrow 30 - 2 = 28\%$$

Q.4) Successive discounts of 10% and 30% are equivalent to a single discount of

$$x+y - \frac{xy}{100} \quad x=10\%, y=30\%$$

$$= 10+30 - \frac{10 \times 30}{100}$$

$$= 40 - 3$$

$$= 37\%.$$

Q.5) A single equivalent discount to the successive discounts of 10%, 20% and 25% is.

$$x=10\%, y=20\%, z=25\%$$

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

$$w = 10+20 - \frac{10 \times 20}{100}$$

$$= 30 - 2$$

$$= 28\%.$$

$$w+z - \frac{wz}{100}$$

$$= 28+25 - \frac{28 \times 25}{100}$$

$$= 53 - 7$$

$$= 46\% \quad (\text{single equivalent discount})$$

Q.6) The marked price of a watch is ₹1000. A retailer buys it at ₹810 after getting two successive discounts of 10%, and another rate which is illegible. What is the second discount rate?

$$MP = ₹1000$$

$$(10\%) = \frac{100}{₹900}$$

$$\frac{90}{₹810}$$

$$\frac{90}{900} \times 100 = 10\%$$

Concept of False Weights

Selling at CP.

CP of 1000gms sugar is ₹100/-

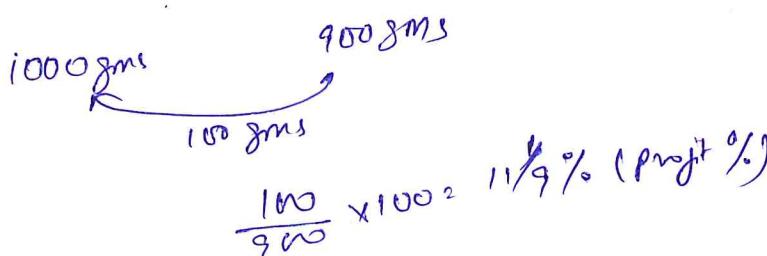
SP of 900gms sugar is ₹100/-

CP of 900gms sugar is $\frac{100}{1000} \times 900$
= ₹90/-

$$\text{Profit} = 100 - 90 = ₹10/-$$

$$\text{Profit \%} = \frac{10}{90} \times 100 = 11\frac{1}{9}\%$$

(OR)



Q.7) A dishonest fruit vendor sells his goods at CP but he uses the weight of 900gms for the kg weight. His gain % is

1000gms lost in ₹ 1000

SP = ₹ 1000 for 900gms.

Cost of 900gms = ₹ 900

$$\text{Profit} = 1000 - 900 \\ = ₹ 100$$

$$\text{Profit \%} = \frac{100}{900} \times 100 \\ = 11\frac{1}{9}\%$$

(Alternative)

$$\frac{\text{Error}}{\text{Actual Weight}} \times 100$$

$$\frac{100}{900} \times 100$$

$$= 11\frac{1}{9}\%$$

Q.8) A shopkeeper sells sugar at ₹ 18 per kg which he has bought at ₹ 15 per kg and he is giving 800gms instead of 1000gms. Find his actual profit %?

$$1000\text{gms} \rightarrow 15/- \\ 800\text{gms} \rightarrow \frac{15}{1000} \times 800 = ₹ 12/-$$

$$\text{SP} = ₹ 18/- \quad \text{CP} = ₹ 12/-$$

$$\text{Profit} = ₹ 18 - ₹ 12 = ₹ 6/-$$

$$\text{Profit \%} = \frac{6}{12} \times 100 = 50\%$$

Q.9) Lalit marks up his goods by 40% and gives discount of 10%. Apart from this, he uses a faulty balance also, which reads 1000gms for 800gms. What is net profit %?

$$\text{det} \quad 1000\text{gms} \xrightarrow{\text{CP}} ₹1,000/-$$

$$\text{MP of } 1000\text{gms} \rightarrow ₹1400/-$$

$$\text{cl of } 800\text{gms} \rightarrow ₹800/-$$

$$\text{st of } 800\text{gms} \rightarrow 1400 - 10\% = ₹1260$$

$$\text{Profit} = 1260 - 800 = ₹460$$

$$\begin{aligned}\text{Profit \%} &= \frac{460}{800} \times 100 \\ &= 57.5\%\end{aligned}$$

Q.17 A firm is selling its product at ₹ 60 per unit. The total cost of production is ₹ 100 and firm is earning total profit of ₹ 500. Later, the total cost increased by 30%. By what % the price should be increased to maintained the same profit level.

(a) 5

(b) 10

(c) 15

(d) 30

(GATE 2013)

Solution

$$SP = ₹ 60 \text{ per unit}$$

$$\text{Total Cost} = ₹ 100/-$$

$$\text{Total Profit} = ₹ 500/-$$

$$\begin{aligned} \text{Total Sell Price} &= ₹ 100 + ₹ 500 \\ &= ₹ 600 \end{aligned}$$

$$\begin{aligned} \text{Total Units Sold} &= \frac{600}{60} \\ &= 10 \text{ units.} \end{aligned}$$

$$\text{New Cost} = ₹ 100 + 30\% = ₹ 130/-$$

$$\text{Profit} = ₹ 500/-$$

$$\text{New SP} = ₹ 500 + 130 = ₹ 630$$

$$\text{New SP per unit} = \frac{630}{10} = ₹ 63/-$$

$$\text{Change in per unit price} = ₹ 63 - ₹ 60 = ₹ 3$$

$$\text{Change (\%)} = \frac{3}{60} \times 100 = 5\% \text{ (Ans)}$$

- Q.2) A fruit seller sold a basket of fruits at 12.5% loss. He has sold it for ₹108 more, he would have made a 10% gain. What is loss in rupees incurred by the fruit seller? (GATE 2018)
- (a) 48 (b) 52 (c) 60 (d) 108

Solution

$$12.5\% \text{ loss} = \frac{1}{8}$$

$$CP = 8$$

$$\text{Loss} = 1$$

$$SP = 8 - 1 = ₹ 7$$

$$\text{Gain} = 10\%$$

$$= 1/10$$

$$CP = 10$$

$$\text{Gain} = 1$$

$$SP = 10 + 1 = ₹ 11$$

$\frac{CP}{8}$	$\frac{49}{1}$	$\frac{SP}{7} \times 10$
10	1	11
<hr/>	<hr/>	<hr/>
80	10	70
80	8	82

$\rightarrow 18/- \text{ more}$

$$\therefore 18 \rightarrow 10$$

$$108 \rightarrow \frac{10}{18} \times 108 = ₹ 60/- (\text{loss})$$

(Alternative)

$$\text{Loss} = 12.5\% \quad \text{S.P.} = 87.5\%] 22.5\% \\ \text{Gain} = 10\%. \quad \text{S.P.} = 110\%]$$

$$22.5\% \rightarrow 108 \\ 12.5\% \rightarrow \frac{108}{22.5} \times 12.5 \\ = \frac{5}{9} \times 108 \\ = ₹ 60/-$$