# Profit Loss Discount And VAT Ex 13.1

## Profit, Loss, Discount, and Value Added Tax (VAT) :-

1) Given

Student buys a pen for Rs 90

$C.P = 90$

and Sell its for Rs 100

$S.P = 100$

Here $S.P > C.P$

So, He gets profit or Gain

$\therefore$ Gain $= S.P - C.P$

$= 100 - 90 = 10$

and we have % Gain $= \frac{\text{Gain}}{C.P} \times 100$

by Substituting

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

$= \frac{100}{9}$ % $= 11\frac{1}{9}$ [converting into mixed fraction]

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

(2) Given

C.P of Saree = 1240

S.P of Saree = 1147

Here C.P > S.P, So, Rekha get loss

$$\text{Loss} = \text{C.P} - \text{S.P}$$

$$= 1240 - 1147$$

$$= 93$$

$\therefore$ Loss = 93

$$\% \text{ Loss} = \frac{\text{Loss}}{\text{C.P}} \times 100$$

$$= \frac{93}{1240} \times 100 = 7.5\ \%$$

$\therefore$ percentage loss is 7.5

(3) Given

A boy buys 9 apples for Rs 9.60 and sells them at 11 apples for Rs 12. To avoid fractions boy buys and sells $9 \times 11 = 99$ apples.

we have

C.P for 9 apples = Rs 9.60

C.P for 1 apples = $\frac{9.60}{9}$

C.P for 99 apples = $99 \times \frac{9.60}{9} = 105.6$ /-

S.P for 11 apples = Rs 12

S.P for 1 apple = $\frac{12}{11}$

S.P for 99 apples = $\frac{12}{11} \times 99 = 108$ /-

clearly

S.P > C.P , He will get profit

$\therefore$ Gain = 108 − 105.6 = S.P − C.P

= 2.4

% Gain = $\frac{\text{Gain}}{\text{C.P}} \times 100$

= $\frac{2.4}{105.6} \times 100 = \frac{25}{11} = 2\frac{3}{11}$ %.

(4) Given

C.P of 10 articles = S.P for 9 articles

Let C.P of one article be 'x'

$\therefore$ S.P for 9 articles = 10x

S.P for 1 article = $\frac{10x}{9}$

Profit = S.P − C.P = $\frac{10x}{9} - x$

= $\frac{x}{9}$

% profit = $\frac{\text{profit}}{\text{C.P}} \times 100$

by Substituting

% profit = $\frac{\frac{x}{9}}{x} \times 100$

= $\frac{1}{9} \times 100$

= $\frac{100}{9} = 11\frac{1}{9}$ %.

(5) Given

Retailer buys radio for Rs. 225

His Overhead expenses Rs 15

$\therefore$ C.P of radio = 225 + 15

= 240

S.P of radio = 300.

$\therefore$ S.P > C.P

profit = S.P − C.P

= 300 − 240 = 60

% profit = $\frac{\text{profit}}{\text{C.P}} \times 100 = \frac{60}{240} \times 100$

$= \frac{\cancel{60}}{\cancel{240}_{4}} \times 100 = 25\%$

(6) Retailer buys a cools for Rs 1200

expenses on it Rs 40

Total price i.e, C.P = 1240

S.P = 1550

% profit = $\frac{\text{Profit}}{\text{C.P}} \times 100$

$= \frac{\text{S.P} - \text{C.P}}{\text{C.P}} \times 100$

$= \frac{1550 - 1240}{1240} \times 100$

$= 25\%$

(7)

c.p of wristwatch = Rs 225 + expenses

= 225 + 15

= 240.

s.p of watch = 300 Here SP > C.P

% profit = $\frac{300 - 240}{240} \times 100$

= 25 %.

(8)

Let

Ramesh bought first box for Rs 'x'.

Cost for Second box = 1300 − x.

For First box

He gets profit 20 % = $\frac{\text{Profit}}{\text{c.p}} \times 100$

$\frac{20}{100} = \frac{\text{S.P} - \text{C.P}}{\text{c.p}}$

$\therefore$ S.P = $x + \frac{20x}{100}$ ——①

for Second box

He losses 12 % = $\frac{\text{c.p} - \text{S.P}}{\text{c.p}} \times 100$

$\frac{12}{100} = \frac{\text{C.P} - \text{S.P}}{\text{c.p}}$

S.P = C.P − $\frac{12}{100}$ .C.P for Second one c.p = 1300 − x

S.P = $(1300 - x) - \frac{12}{100}(1300 - x)$

$$S.P = 1300 - x - 156 + \frac{12x}{100}$$

$$= 1144 - \frac{22}{25}x \quad \text{—②}$$

Given Selling price of both boxes are same

$$\therefore \quad ① = ②$$

$$x + \frac{20x}{100} = 1144 - \frac{22}{25}x$$

$$x\left(1 + \frac{20}{100} + \frac{22}{25}\right) = 1144$$

$$x \times \frac{52}{25} = 1144$$

$$x = 550$$

$\therefore$ C.P of one box $= 550$

C.P of Second box $= 1300 - 550$

$= 750$

(9) Given Let C.P of one pen $= x$

S.P of 10 pens $=$ C.P of 14 pens

$$S.P \text{ of } 1 \text{ pen} = \frac{14x}{10}$$

$$\% \text{ Gain} = \frac{S.P - C.P}{C.P} \times 100$$

$$= \frac{\frac{14x}{10} - x}{x} \times 100 = \frac{x\left(\frac{14}{10} - 1\right)}{x} \times 100$$

$= 40\ \%$.

(10) Let c.p of one chair = $x$

Given

c.p for 18 chairs = s.p for 16 chairs

s.p for 1 chair = $\frac{18x}{16}$

clearly s.p > c.p $\because \frac{18}{16}x = 1.125x$

we get profit

$\therefore$ profit % = $\frac{SP - C.P}{C.P} \times 100$

$= \frac{\frac{18}{16}x - x}{x} \times 100$

$= \frac{x\left(\frac{18-16}{16}\right)}{x} \times 100$

profit % = 12.5 %.

(11) Let c.p of 1 orange = $x$

Given

s.p of 18 oranges = $16x$

s.p = $\frac{16x}{18}$

clearly c.p > s.p

$\therefore$ % Loss = $\frac{C.P - S.P}{C.P} \times 100$

$= \frac{x\left(1 - \frac{16}{18}\right)}{x} \times 100 = \frac{100}{9} = 11\frac{1}{9}$ %.

(12) Let c.p of motor cycle for Ravish = $x$

Ravish sells it for ₹ 28 % loss

$$\frac{28}{100} = \frac{\text{Loss}}{\text{c.p}} = \frac{\text{c.p} - \text{s.p}}{\text{c.p}}$$

$$\text{s.p} = x - \frac{28x}{100} = x\left(\frac{18}{25}\right)$$

$\therefore$ c.p of Vineeth $= \frac{18x}{25} + 1680$ (expenses) —①

s.p of Vineeth = Rs 35910 for profit = 12.5 % —②

$$\therefore \frac{12.5}{100} = \frac{\text{s.p} - \text{c.p}}{\text{c.p}}$$

by Substituting ① and ②

$$\frac{12.5}{100}\left(\frac{18x}{25} + 1680\right) = 35910 - \frac{18x}{25} - 1680$$

$$\frac{9x}{100} + 210 = 34230 - \frac{18x}{25}$$

$$\frac{9x}{100} + \frac{18x}{25} = 34020$$

$$x\left(\frac{81}{100}\right) = 34020$$

$$x = \frac{24020 \times 100}{81}$$

$$x = 42000$$

$\therefore$ c.p for Ravish = Rs 42000/-

(13) Given

S.P of book = Rs 258

$$\text{gain} = 20\% = \frac{20}{100} = \frac{\text{S.P} - \text{C.P}}{\text{C.P}}$$

$$\frac{20 \times \text{C.P}}{100} + \text{C.P} = \text{S.P}$$

$$\text{C.P}\left(\frac{120}{100}\right) = 258$$

$$\text{C.P} = 215$$

To get 30%, let S.P be $x$

$$\therefore \frac{30}{100} = \frac{x - 215}{215}$$

$$x = 215\left(\frac{30}{100} + 1\right)$$

$$x = 215 \times \frac{130}{100} = 279.50$$

∴ So, to get 30% profit, he should sell it for Rs 279.50

(14) C.P of briefcase = 900

$$\text{loss} = 8\% = \frac{\text{C.P} - \text{S.P}}{\text{C.P}}$$

$$\frac{8}{100} = \frac{\text{C.P} - \text{S.P}}{\text{C.P}}$$

$$\text{S.P} = -\frac{8}{100}\text{C.P} + \text{C.P}$$

$$\text{S.P} = \frac{92}{100}\text{C.P} = 736/-$$

Given it is further reduced by 5 %.

$$S.P = \frac{95}{100} \times 736$$

$$= 699.20$$

(15) Given

S.P for 90 ball pens = 160

$$\text{loss} = \frac{20}{100} = \frac{C.P - S.P}{C.P}$$

$$\frac{20}{100} \times C.P = C.P - S.P$$

$$C.P = \frac{S.P}{\left(1 - \frac{20}{100}\right)}$$

$$C.P = \frac{160}{80} \times 100$$

$$C.P = 200$$

$\therefore$ C.P for 90 ball pens = 200

C.P of 1 ball pen = $\frac{200}{90}$

Given to get 20 %.

S.P for $x$ pens = 96

S.P for 1 pen = $\frac{96}{x}$

$$\text{profit} = 20\% = \frac{20}{100} = \frac{S.P - C.P}{C.P}$$

$$\frac{20}{100} = \frac{\frac{96}{x} - \frac{200}{90}}{\left(\frac{200}{90}\right)}$$

$$\left(\frac{20}{100} \times \frac{200}{90}\right) + \frac{200}{90} = \frac{96}{x}$$

$x = 36$ $\therefore$ no of ball pens = 36

(16) Let the c.p of article $= x$

profit = 25 %.

$$\frac{25}{100} = \frac{S.P - C.P}{C.P}$$

$$S.P = \frac{125}{100} \cdot C.P = \frac{125}{100} \cdot x$$

Given that

If the c.p of article 20 % less than $x$

$$(C.P)_2 = \frac{80}{100} x$$

and $(S.P)_2 = \frac{125}{100} x - 36.75$, he get 30 % profit

$$\therefore \frac{30}{100} = \frac{(S.P)_2 - (C.P)_2}{(C.P)_2}$$

$$\left(\frac{30}{100}\right) \times \frac{80}{100} x = \frac{125x}{100} - 36.75 - \frac{80}{100} x$$

$$\frac{24}{100} x = \frac{45x}{100} - 36.75$$

$$36.75 = \frac{21x}{100}$$

$$x = 175$$

Cost price of article = 175 /-

(17)

Let

C.P for 1000 gm pulses = $x$

but

S.P for 950 gm pulses = $x$

$\therefore$ S.P for 1000 grms = $\frac{1000 \times x}{950}$

$$\text{Gain} = \frac{\text{S.P} - \text{C.P}}{\text{C.P}} \times 100$$

$$= \frac{\frac{1000x}{950} - x}{x} \times 100$$

$$= \left(\frac{1000}{950} - 1\right) \times 100 = \frac{100 \times 50}{950}$$

$$= \frac{100}{19} = 5\frac{5}{19}\ \%$$

(18)

Let

C.P of one table be $x$

C.P of second table = $3120 - x$

For first table

Loss = 15 %

$$\frac{15}{100} = \frac{\text{C.P} - \text{S.P}}{\text{C.P}}$$

$$\text{S.P} = \text{C.P} - \frac{15}{100}\text{C.P}$$

$$\text{S.P} = \frac{85}{100} \cdot x \quad \text{---(1)}$$

For Second table

$$c.p = 3120 - x$$

Gain 36 %.

$$\frac{36}{100} = \frac{s.p - c.p}{c.p}$$

$$\frac{36}{100}\left[3120 - x\right] = s.p - (3120 - x)$$

$$1123.20 - \frac{36x}{100} = s.p - 3120 + x$$

$$4243.20 - \frac{136x}{100} = s.p \quad \text{——— (2)}$$

Given

s.p of both tables are same

$$\frac{85x}{100} = 4243.20 - \frac{136x}{100}$$

$$\frac{221x}{100} = 4243.20$$

$$x = 1920$$

∴ c.p of one table = 1920 /-

c.p of Second table = 3120 − 1920

= 1200 /-

(19)

Let C.P of One fan = $x$

C.P of Second fan = $3605 - x$

For One fan :-

$C.P = x$

Profit = 15 % $= \frac{15}{100} = \frac{S.P - x}{x}$

$S.P = \frac{15x}{100} + x$

$S.P = \frac{115x}{100}$ — (1)

For Second fan :-

$C.P = 3605 - x$

Loss = 9 % $= \frac{C.P - S.P}{C.P} \times 100$

$\frac{9}{100} = \frac{(3605 - x) - S.P}{(3605 - x)}$

$S.P = 3605 - x - \frac{9}{100}(3605 - x)$

$S.P = \frac{65611}{20} - x + \frac{9x}{100}$ — (2)

Given

S.P of both fans are Same

(1) = (2)

$\frac{115x}{100} = \frac{65611}{20} - x + \frac{9x}{100}$

$$\frac{115x}{100} = \frac{65611}{20} - x + \frac{9x}{100}$$

$$\frac{115x}{100} + x - \frac{9x}{100} = \frac{65611}{20}$$

$$\frac{103}{50}x = \frac{65611}{20}$$

$$x = 1592.50$$

c.p of Second fan = 3605 − 1592.50

= 2012.50

(20) Given

A man buys a set of 11 toffees for Rs 10 and another set of 9 toffees for Rs 10

to avoid fractions, let us assume he buys total $11 \times 9 = 99$ toffees.

for 99 toffees

first set contains 11 toffees

So, he buys 9 sets of 11 toffees for $9 \times 10$

$= 90/-$

he buys 11 sets of 9 toffees for $11 \times 10$

$= 110/-$

Total c.p = 110 + 90 = 200

Total toffees = 198 given

c.p of each toffee = $\left(\frac{200}{198}\right)$ @ S.P = 1

cp > S.p % loss = $\frac{\left(\frac{200}{198} - 1\right)}{(200)/198} \times 100 = 1\%$

(21) Let 'x' be c.p of tricycle

Sold for gain of 16 %.

$$\frac{16}{100} = \frac{S.P - x}{x}$$

$$S.P = \frac{16x}{100} + x$$

$$S.P = \frac{116x}{100}$$

If S.P is 100 more, then gain = 20 %.

$$\frac{20}{100} = \frac{S.P - C.P}{C.P}$$

$$\frac{20}{100}x = \frac{116x}{100} + 100 - x$$

$$\frac{120x}{100} - \frac{116x}{100} = 100$$

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

$$x = \frac{100 \times 100}{4_1} \quad 25$$

$$x = 2500$$

∴ c.p of tricycle = 2500 /-

(22) Given

She bought 16 dozen ball pens

Loss for 16 dozen pens

= S.P of 8 ball pens.

Let 'x' be c.p of each pen

c.p of 16 dozens $= 16 \times 12 \times x$

Loss = (s.p) 8

$16 \times 12 \times x - 16 \times 12 \times S.P = (S.P)\,8$

$16 \times 12\, x = (200) \times S.P$

$S.P = \frac{192}{200} x.$

$\text{Loss \%} = \frac{c.p - s.p}{c.p} \times 100$

$= \left( \frac{x - \frac{192x}{200}}{x} \right) \times 100$

$= \frac{8}{2} = 4\ \%$

If c.p of 16 dozens = 576

$16 \times 12 \times x = 57.6$

$x = \frac{576}{16 \times 12}$

S.p of one pen $= \frac{192}{200} x$

S.p of dozen pens $= 12 \times \frac{192}{200} \times \frac{576}{12 \times 16}$

$= 34.56$ /-

(23) Let c.p of Shirt = x

He Sold one Shirt for profit 4 %.

$$\frac{4}{100} = \frac{S.P - C.P}{C.P}$$

$$S.P = \frac{104}{100} C.P \quad \text{—} (1)$$

He Sold other Shirt for profit 5 %.

$$\frac{5}{100} = \frac{S.P - C.P}{C.P}$$

$$S.P = \frac{105}{100} C.P \quad \text{—} (2)$$

Given difference between S.P. of shirts = 6

$$\therefore \frac{105}{100} C.P - \frac{104}{100} C.P = 6$$

$$\frac{C.P}{100} = 6$$

$$C.P = 600$$

Cost price of Shirt = 600

Selling price of one shirt $= \frac{104}{100} \times 600$

$= 624$ /-

Selling price of other shirt $= \frac{105}{100} \times 600$

$= 630$ /-

Let 'x' be c.p of 16 dozens

1 dozen c.p is $\frac{x}{16}$

1 pen c.p is $\frac{x}{16 \times 12}$

(24)

c.p of 100 hens = 8000

c.p of 1 hen = 80

and Sold 20 for gain 5 %.

$$\frac{5}{100} = \frac{S.P - C.P}{C.P}$$

$$S.P = \frac{105}{100} C.P$$

$$S.P = \frac{105}{100} \times 80 = 84$$

Selling price for 20 hens $= 84 \times 20$

$= 1680$

Let S.P of remaining 80 hens $= 80x$

On whole gain = 20 %.

$$\frac{20}{100} = \frac{(S.P)_{total} - (C.P)_{total}}{(C.P)_{total}}$$

$$\frac{20}{100} = \frac{(80x + 1680) - 8000}{8000}$$

$$9600 = 80x + 1680$$

$$x = 99.$$

Profit for these hens

$$\text{Profit \%} = \frac{99 - 80}{80} \times 100$$

$$= \frac{19}{80} \times 100 = 23.75 \%.$$

# Profit Loss Discount And VAT Ex 13.2

Exercise :- 13.2

(1) i) Given M.P = 1300

Discount = 10 % = $\frac{\text{Discount}}{\text{M.P}} \times 100$

$\frac{10}{100} = \frac{\text{M.P} - \text{S.P}}{\text{M.P}}$

$\frac{10}{100}\text{M.P} = \text{M.P} - \text{S.P}$

$\text{S.P} = \text{M.P} - \frac{10}{100}\text{M.P}$

$\text{S.P} = \frac{90}{100} \times 1300 = 1170$ /-

ii) Given M.P = 500

discount = 15 %

$\frac{\text{M.P} - \text{S.P}}{\text{M.P}} \times 100 = 15$

$\text{S.P} = -\frac{15}{100}\text{M.P} + \text{M.P}$

$\text{S.P} = \text{M.P}\left(1 - \frac{15}{100}\right)$

$= 500 \times \frac{85}{100}$

$\text{S.P} = 425$ /-

(2) Given

i) S.P = Rs 1222

discount = 6 %.

$$\frac{6}{100} = \frac{M.P - S.P}{M.P}$$

$$\frac{6}{100} M.P = M.P - S.P$$

$$S.P = M.P - \frac{6}{100} M.P$$

$$\frac{100 \times 1222}{(100-6)} = M.P$$

$$M.P = 1300$$

ii)

S.P = Rs 495

discount = 1 %.

$$\frac{1}{100} = \frac{M.P - S.P}{M.P}$$

$$\frac{M.P}{100} = M.P - S.P$$

$$S.P = M.P - \frac{M.P}{100}$$

$$\frac{495 \times 100}{99} = M.P$$

$$M.P = 500$$

(3) i) Given

M.P = Rs 900

S.P = Rs 873

discount = M.P − S.P

= 900 − 873

= 27

% discount = $\frac{\text{discount}}{\text{M.P}} \times 100$

= $\frac{27}{900} \times 100 = 3\ \%$

ii) Given

M.P = Rs 500

S.P = Rs 425

% discount = $\frac{\text{M.P} - \text{S.P}}{\text{M.P}} \times 100$

= $\frac{500 - 425}{500} \times 100$

= $\frac{75}{500} \times 100 = 15\ \%$

(4) Given

Marked price = Rs 650/-

discount = 3 %

discount = $\frac{3}{100} = \frac{\text{M.P} - \text{S.P}}{\text{M.P}}$

$\frac{3}{100}$ M.P = M.P − S.P

S.P = $\frac{97}{100} \times$ M.P

S.P = $\frac{97}{100} \times 650 = 630.5$

Customer has to pay = 630.50/-

(5) Given Marked price = 720

Selling price = 684

discount = M.P − S.P

= 720 − 684 = 36

% discount = $\frac{\text{discount}}{\text{M.P}} \times 100$

= $\frac{36}{720} \times 100 = 5\%$

discount = 5%.

(6) Given

Saree is Sold for Rs 720 = S.P

discount = 20%.

$\frac{20}{100} = \frac{\text{M.P} - \text{S.P}}{\text{M.P}}$

$\frac{20}{100}\text{M.P} = \text{M.P} - 720$

$720 = \frac{80}{100}\text{M.P}$

$\text{M.P} = \frac{720 \times 100}{80}$

M.P = 900

(7) Given discount = $7\frac{1}{2}\%$

= $\frac{15}{2}\%$

and S.P = Rs 555

$$\frac{15}{2} = \text{discount } \%$$

$$\left(\frac{\frac{15}{2}}{100}\right) = \frac{M.P - S.P}{M.P}$$

$$\frac{15}{200} \cdot M.P = M.P - 555$$

$$555 = \frac{185}{200} M.P$$

$$M.P = \frac{555 \times 200}{185}$$

$$M.P = 600/-$$

(8)

Given

Customer gives 10 % off on marked price

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

and $M.P = 250/-$

$$\frac{10}{100} = \frac{M.P - S.P}{M.P}$$

$$S.P = M.P - \frac{10}{100} M.P$$

$$S.P = \frac{90}{100} \times 250$$

$$S.P = 225$$

and he gets 25 % profit

$$\frac{25}{100} = \frac{S.P - C.P}{C.P}$$

$$\frac{25}{100} c.p = s.p - c.p$$

$$\frac{125}{100} c.p = s.p$$

$$c.p = \frac{225 \times 100}{125}$$

$$c.p = 180 /-$$

(9) Given M.P = 500

discount = 20% $\Rightarrow \frac{20}{100} = \frac{M.P - S.P}{M.P}$

$$S.P = \frac{80}{100} . M.P$$

$$S.P = \frac{80}{100} \times 500 = 400 /-$$

He gets profit of 25%.

$$\frac{25}{100} = \frac{S.P - C.P}{C.P}$$

$$\frac{125}{100} C.P = S.P$$

$$C.P = \frac{\cancel{100}^{4}}{\cancel{125}_{5}} \times \cancel{400}^{80}$$

$$C.P = 320$$

So, he gets the article for Rs 320 /-

$$\frac{25}{100} c.p = s.p - c.p$$

$$\frac{125}{100} c.p = s.p$$

$$c.p = \frac{225 \times 100}{125}$$

$$c.p = 180 /-$$

(9) Given M.P = 500

discount = 20% $\Rightarrow \frac{20}{100} = \frac{M.P - S.P}{M.P}$

$$S.P = \frac{80}{100} . M.P$$

$$S.P = \frac{80}{100} \times 500 = 400 /-$$

He gets profit of 25%.

$$\frac{25}{100} = \frac{S.P - C.P}{C.P}$$

$$\frac{125}{100} C.P = S.P$$

$$C.P = \frac{\cancel{100}^{4}}{\cancel{125}_{5}} \times \cancel{400}^{80}$$

$$C.P = 320$$

So, he gets the article for Rs 320 /-

(10) Given c.p of article = 170

profit = 20 %

$$\frac{20}{100} = \frac{S.P - C.P}{C.P}$$

$$S.P = \frac{120}{100} \times C.P$$

$$S.P = \frac{120}{100} \times 170$$

$$S.P = 204 \quad \text{and}$$

discount = 15 %

$$\Rightarrow \frac{15}{100} = \frac{M.P - S.P}{M.P}$$

$$\frac{15}{100} M.P = M.P - S.P$$

$$S.P = \frac{85}{100} M.P$$

$$M.P = \frac{100 \times 204}{85}$$

$$M.P = 240$$

(11) Given

discount = 25 %

$$\frac{M.P - S.P}{M.P} = \frac{25}{100}$$

$$\therefore M.P - S.P = \frac{25}{100} M.P$$

$$S.P = \frac{75}{100} \cdot M.P \quad \text{——(1)}$$

and given profit = 50%.

$$\frac{50}{100} = \frac{S.P - C.P}{C.P}$$

$$S.P = \frac{50}{100} C.P + C.P$$

$$S.P = \frac{150}{100} C.P \quad \text{——} (2)$$

we known (1) = (2)

$$\frac{75}{100} M.P = \frac{150}{100} C.P$$

$$\frac{C.P}{M.P} = \frac{75}{150} = \frac{1}{2}$$

ratio of C.P : M.P = 1 : 2

(12) Given

Marked price on Cycle = 840

discount = 10 %.

$\therefore$ S.P of cycle $= \frac{90}{100} \times 840$

$= 756/-$

and profit = 26 %.

$$\frac{S.P - C.P}{C.P} = \frac{26}{100}$$

$$S.P = \frac{126}{100} C.P \Rightarrow C.P = \frac{100 \times 756}{126}$$

$C.P = 600/-$ (actual cost)

(13) Let advertised price be $x$

commission is 23% on advertised price

$\therefore$ Selling price $= \frac{77}{100} \cdot x$ —(1)

and given profit = 56

profit % = 10

$\frac{10}{100} = \frac{\text{profit}}{\text{c.p}}$

$\Rightarrow$ c.p = 560

profit = s.p − c.p = 56

s.p = 560 + 56

s.p = 616/-

$\therefore \frac{77}{100} x = 616$ ( $\because$ from (1) )

$x = \frac{61600}{77}$

$x = 800/-$

$\therefore$ advertised cost = 800.

(14) Given

shop keeper marks his goods at 40% greater than cost price

Let cost price be 'x'

marked price is $\frac{140}{100} x$ ( $\because$ 40 more than 100 % c.p is 100 )

discount on marked price is 5 %.

$$\frac{5}{100} = \frac{M.P - S.P}{M.P}$$

$$\therefore S.P = \frac{95}{100} M.P$$

$$C.P = \frac{95}{100} \times \frac{140}{100} x$$

Given $S.P = 1064$

$$1064 = \frac{95}{100} \times \frac{140}{100} \times x$$

$$x = 1064 \times \frac{100}{95} \times \frac{100}{140}$$

$$x = 800$$

∴ cost price is 800

selling price is 1064

∴ profit $= 1064 - 800$

$= 264$ /-

(15) Given

Ear rings are braught at 25 % discount

profit of seller = 16 %.

$$\frac{16}{100} = \frac{\text{profit}}{C.P}$$

$$C.P = \frac{3}{\cancel{48} \times 100} \over \cancel{16}_{1}$$

$$C.P = 200$$

cost price of ear ring = 300 /-

and

$$\text{profit} = 48$$

$$S.P - C.P = 48$$

$$S.P = C.P + 48$$

$$S.P = 348$$

and given discount = 25 %.

$$\frac{25}{100} = \frac{M.P - S.P}{M.P}$$

$$S.P = \frac{75}{100} M.P$$

$$M.P = \frac{\cancel{100}^{4} \times \cancel{348}^{116}}{\cancel{75}_{1}}$$

$$M.P = 464$$

$\therefore$ marked price = 464 /-

(16) Given

printed price = 275

discount = 32 %.

we have

$$\text{discount \%} = \frac{M.P - S.P}{M.P} \times 100$$

$$32 = \left( \frac{275 - S.P}{275} \right) \times 100$$

$$\frac{32}{100} \times 275 = 275 - S.P$$

$$S.P = 275 - \frac{32}{100} \times 275$$

$$S.P = 187 /-$$

Book seller should pay = 187 /-.

(17)

Given discount = 20 %.

$$\frac{M.p - S.p}{M.p} = \frac{20}{100}$$

$$S.p = \frac{80}{100} M.p \quad \text{—①}$$

and trader lose is 10 %.

$$\frac{C.p - S.p}{C.p} = \frac{10}{100}$$

$$S.p = \frac{90}{100} C.p \quad \text{—②}$$

we have to find

% of marked price above cost price

$$\Rightarrow \frac{M.p - C.p}{C.p} \times 100 = \frac{\left(\frac{100}{80}\right)S.p - \left(\frac{100}{90}\right).S.p}{\left(\frac{100}{90}\right).S.p} \times 100$$

$$= \frac{\left(\frac{100}{80}\right) - \left(\frac{100}{90}\right)}{\left(\frac{100}{90}\right)} \times 100$$

$$= \frac{100\left[\frac{90 - 80}{90 \times 80}\right] \times 90}{100} \times 100$$

$$= \frac{1000}{80} = 12.5 \%.$$

∴ % of marked price above cost price

= 12.5 %.

(18) List price of table fan = Rs 480

M.P = 480

Retailer buys it at discount 25 %.

∴ Cost price for the Retailer is $\left(\frac{75}{100}\right) \times 480$

$$C.P = \frac{75}{100} \times 480$$

$$C.P = 360$$

Retailer Sells it to gain 15 %.

$$15\ \% = \frac{S.P - C.P}{C.P} \times 100$$

$$\Rightarrow S.P = \frac{115}{100} \times C.P$$

$$S.P = \frac{115}{100} \times 360$$

$$S.P = 414.$$

Retailer should sell it for Rs 414 to get 15 % gain.

(19) Given

S.P of item by Rohit = 660 to get

10 % profit

$$\frac{10}{100} = \frac{S.P - C.P}{C.P} \times 100$$

$$\frac{110}{100} C.P = S.P$$

$$C.P = \frac{100}{110} \times 660 = 600$$

Rohit brought that item for Rs 600/- at 25 % discount.

This is the Selling price for shop keeper

∴ He offers 25% discount

$$\frac{25}{100} = \frac{M.P - S.P}{M.P}$$

$$\frac{25}{100} = \frac{(M.P - 600)}{M.P}$$

$$\left(\frac{25}{100}\right) M.P = (M.P - 600)$$

$$600 = \frac{75}{100} M.P$$

$$M.P = \frac{600}{75} \times \frac{100}{1}$$

$$M.P = 800/-$$

(20) Given

Cycle merchant offers 20 % discount on M.P

$$\frac{20}{100} = \frac{M.P - S.P}{M.P}$$

$$S.P = \frac{80}{100} M.P \quad \text{---(1)}$$

and he gets a profit of 20 %.

$$\frac{20}{100} = \frac{\text{Profit}}{C.P}$$

$$C.P = \frac{360}{20} \times 100 \qquad (\because \text{Gain} = 360)$$

$$C.P = 1800 \text{ /-}$$

$$S.P = C.P + \text{gain} = 1800 + 360$$

$$= 2160 \text{ /-}$$

$$\therefore M.P = \frac{100}{80} \times S.P \qquad (\because \text{from (1)})$$

$$M.P = \frac{100}{80} \times \overset{27}{\cancel{2160}}$$

$$M.P = 2700 \text{ /-}$$

(21) Given

Cost price of garment = 1470 /-

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

$$\frac{S.P - C.P}{C.P} = \frac{10}{100}$$

$$S.P = \frac{110}{100} \times 1470 = 1617 \text{ /-}$$

at a discount of 12.5 %.

$$\frac{M.P - S.P}{M.P} \times 100, = 12.5$$

$$\frac{M.P - S.P}{M.P} = \frac{12.5}{100}$$

$$S.P = \left(1 - \frac{12.5}{100}\right) M.P$$

$$M.P = \frac{1617 \times 100}{87.5}$$

$$M.P = 1848 \text{ /-}$$

Marked price on Suit = 1848 /-

(22) Aslam gets a pair of Shoes for Rs 1200 and should gain 12 %.

$$\frac{S.P - C.P}{C.P} \times 100 = 12$$

$$S.P = \frac{112}{100} \times C.P = \frac{112}{100} \times 1200$$

S.P Should be 1344 /-

at discount 16 %.

$$\frac{M.P - S.P}{M.P} \times 100 = 16$$

$$M.P - S.P = \frac{16}{100} M.P$$

$$\frac{84}{100} M.P = S.P$$

$$M.P = \frac{1344 \times 100}{84}$$

$$M.P = 1600$$

marked price should be 1600 /-

(23) Given

Marked price of shirt = 850/-

and sells at discount 4 %.

$$\frac{4}{100} = \frac{M.P - S.P}{M.P}$$

$$\frac{4}{100} M.P = M.P - S.P$$

$$S.P = \frac{96}{100} M.P$$

$$S.P = \frac{96}{100} \times 850$$

S.P = 816/- , he should profit of 20 %.

$$\therefore \frac{20}{100} = \frac{S.P - C.P}{C.P}$$

$$S.P = \frac{120}{100} \cdot C.P$$

$$C.P = \frac{100 \times 816}{120}$$

C.P = 680/-

Cost price of shirt = 680/-

(24) Given

Marked price = Rs 1120/-

and sells at discount 10 % offs

$$S.P = \frac{90}{100} \times M.P$$

$$S.P = \frac{90}{100} \times 1120 = 1008/-$$

He should get profit of 26 %.

$$\frac{26}{100} = \frac{S.P - C.P}{C.P}$$

$$S.P = \frac{126}{100} C.P$$

$$C.P = \frac{100 \times 1008}{126}$$

$$C.P = 800/-$$

Cost price for pair of shoes = 800/-

(25) Given

Marked price = Rs 1250/-

discount = 10 %.

$$S.P = \left(\frac{90}{100}\right) \times M.P$$

$$= \frac{90}{100} \times 1250 = 1125/-$$

and he gets profit of 25 %.

$$S.P = \frac{125}{100} \cdot C.P$$

$$C.P = \frac{100 \times 1125}{125} 9$$

$$C.P = 900$$

Cost price of pan = Rs 900/-

# Profit Loss Discount And VAT Ex 13.3

Exercise :- 13.3

(1) List price of Refrigerator = Rs 9700

VAT = 6 %.

$\therefore$ VAT = 6 % of 9700

$= \frac{6}{100} \times 9700 = 582$

Total Amount one has to pay is

$= 9700 + 582 = 10282$

(2) Let 'x' be list price of watch

given $\Rightarrow$ VAT = 10 %.

VAT = 10 % of $x = \frac{10}{100} x$

$\therefore$ Total price $= x + \frac{10}{100} x$

Given that

Vikram bought watch for Rs 825

$x + \frac{x}{10} = 825$

$x\left(\frac{11}{10}\right) = 825$

$x = 750$

$\therefore$ list price of watch = 750/-

(3) Let 'x' be list price of shirt

VAT = 7% of x

Total price $= x + \frac{7}{100}x = \frac{107}{100}x$

$\therefore \frac{107x}{100} = 374.50$

$x = 374.50 \times \frac{100}{107}$

$x = 350/-$

list price of shirt = 350

(4) Given Sale price of shoes is Rs 175

VAT = 7% of 175

$= \frac{7}{100} \times 175 = 12.25$

$\therefore$ VAT = 12.25

$\therefore$ Net value of pair of shoes

= Sale price + VAT

= 175 + 12.25

= 187.25

(5) Given list price of shoes = 250

Let x % be VAT

$$VAT = \frac{x}{100} \times 250 = 20$$

$$x = \frac{20 \times 100}{250} = \frac{\cancel{200}}{\cancel{25}_1} 8$$

$$x = 8\ \%$$

$\therefore$ VAT = 8 %.

(6) price of goods = 5500

He gets rebate or discount of 5 %.

$\therefore$ Selling price $= \frac{95}{100} \times 5500$

$= 5225/-$

and VAT = 5 % S.P

$= \frac{5}{100} \times 5225 = 261.25$

Total Amount Sarita has to pay is

$= S.P + VAT$

$= 5225 + 261.25$

$= 5486.25$

(7) Let Original cost of furniture = $x$

VAT = 10 % of $x$

Total cost inclusive VAT = $x + \frac{10}{100}x$

$\therefore \quad 7150 = x\left\{\frac{110}{100}\right\}$

$x = 6500$

Original cost of furniture = 6500

(8) Let Original cost of furniture = $x$

$VAT = \frac{10}{100}x$

Total Cost = $x + \frac{10}{100}x = 13750$

$x\left(\frac{110}{100}\right) = 13750$

$x = 12500$

Original cost of furniture = 12500 /-

(9) Original cost of TV is Rs 12000

Let VAT = $x$ %

$\therefore \quad 12000 + \frac{x}{100} \times 12000 = 13440$

$\frac{x}{} \times 120 = (13440 - 12000)$

$x \times 120 = 1440$

$x = \frac{1440}{120} = 12$

$\therefore$ VAT = 12 %.

(10)

cost of radio = Rs 2568

Let $x$ be sale price of radio

VAT = 7 % of $x$

Total cost she has to pay = $\left(x + \frac{7}{100}x\right)$

$\therefore x + \frac{7}{100}x = 2568$

$x\left(\frac{107}{100}\right) = 2568$

$x = \frac{256800}{107}$

$x = 2400$

$\therefore$ Reduction in price of radio = 2568 − 2400

= 168 /-

(11)

Given

cost of a pair of shoes = Rs 800

cost of 2 pairs of shoes = 1600

VAT = 5 % of 1600 = $\frac{5}{100} \times 1600$

= 80

Amount paid for 2 pair of shoes = 80 + (800) 2

= 1680

cost of sewing machine = 1500

VAT = 6% of 1500 = $\frac{6}{100} \times 1500 = 90$

Amount paid for Sewing machine = (1500 + 90)

= 1590

Cost for one Tea-set = Rs 650

Cost for two tea sets = 650 × 2 = 1300

VAT = 4 % of 1300

$= \frac{4}{100} \times 1300 = 52$

Amount paid for tea sets = 1352

Total Amount = 1680 + 1590 + 1352

= 4622

(12)

Let Sale price of motorcycle = $x$

VAT = 10 % of $x$

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

Total cost = $x + \frac{10}{100} x = \frac{110}{100} x$

$\frac{110}{100} x = 17600$

$x = \frac{17600 \times 100}{110}$

$x = 16,000$

∴ Sale price of motorcycle = 16000 /-

(13) Cost price of leather = 900

But Manoj pays 990 including VAT

$\therefore$ VAT = 990 − 900

= 90

Let x % be VAT

$\frac{x}{100} \times 900 = 90$

$x = 10\ \%$

$\therefore$ VAT charged is 10 %

(14) Biscuits and Bakery products costing Rs 50

VAT = 5 % of 50

$= \frac{5}{100} \times 50^{1} = 2.50$

Amount paid for Biscuits and bakery products = 50 + 2.50 = 52.50 /-

Medicines costing Rs 90

VAT = 10 % of 90

$= \frac{10}{100} \times 90 = 9$

Amount paid for Medicines = 90 + 9 = 99/-

Clothes costing Rs 400

VAT = 1 % of 400 $= \frac{1}{100} \times 400 = 4$

Amount paid for clothes = 404 /-

Cosmetics costing Rs 150

VAT = 10 % of 150

$= \frac{10}{100} \times 150 = 15$

Amount paid for cosmetics = 165

Total Amount to be paid = 52.50 + 99 + 404 + 165

= 720.50

(15) Let 'x' be Sale price of set

VAT = 10 % of 'x'

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

Total cost $= x + \frac{10x}{100} = 165$

$x\left(\frac{110}{100}\right) = 165$

$x = \frac{165 \times 100}{110}$

$x = 150$

Sale price of set = 150/-

(16) List price of bicycle = 'x'

VAT = 10 % of x $= \frac{10}{100} x$

∴ purchase a bicycle for Rs 660

$x + \frac{10}{100} x = 660$

$$x\left(\frac{\cancel{116}^{1}}{100}\right) = \cancel{660}^{6}$$

$$x = 600$$

List price of bicycle = 600/-

(17) Let 'x' be list price of television

VAT = 8 % of x

$$= \frac{8}{100}x$$

Total price $= x + \frac{8}{100}x$

$$\frac{108}{100}x = 12500$$

$$x = 12500/-$$

∴ list price of television = 12500

(18) Given Marked price Rs 2,10,000

discount = 5 %

$$\frac{M.p - S.p}{M.p} = \frac{5}{100}$$

$$S.p = M.p\left(1 - \frac{5}{100}\right)$$

$$S.p = \frac{95}{100} \times 2,10,000$$

$$S.p = 199500$$

VAT = 10 % on S.p

$$= \frac{10}{\cancel{100}} \times \cancel{199500} = 19950$$

Total cost Shikha had to pay for purchasing the car = 199500 + 19950 = 219450

(19) Let 'x' be price of cosmetic

$$\text{VAT} = \frac{15}{100}x$$

$$\therefore \left(x + \frac{15}{100}x\right) = 345$$

$$x = \frac{345 \times 100}{115}$$

$$x = 300$$

Let $y$ be price of purse

$$\text{VAT} = \frac{10}{100} \cdot y$$

$$\left(y + \frac{y}{10}\right) = 110$$

$$y = \frac{110 \times 10}{11} = 100$$

Total Cost excluding VAT = 200 + 100 = 400

Let 3% be VAT percentage

$$400 + \left(\frac{3}{100} \times 400\right) = (345 + 110)$$

$$3 = \frac{55}{4} = 13.75$$

VAT on whole transaction = 13.75 %.

(20) Let 'x' be buying price of Customer excluding VAT

$\therefore$ VAT $= \frac{10}{100} x$

$\therefore x + \frac{1}{10} x = 2563$

$x = \frac{2563 \times 10}{11}$

$x = 2330$

but List price of Cooler $= 2563$

Discount in price $= 2563 - 2330$

$= 233$.

(21) List price of washing machine $= 9000$

and discount $= 5\%$

Selling price $= \frac{95}{100} \times 9000$

$= 8550$

VAT $= 10\%$ of $8550$

$= \frac{10}{100} \times 8550 = 855$

Total money customer has to pay

$= 8550 + 855$

$= 9405/-$