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Sahi Prep Hai Toh Life Set Hai

PROFIT & LOSS

Part 1

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Profit & Loss

Session I — Basic Terms & Formulas
5 varieties

Session II — 7-8 varieties

Session III — Marked Price

Session IV — Dishonest Salesman

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UNDERSTANDING BASIC TERMS

CP (Cost Price)

The price at which we buy things.

SP (Selling Price)

The price at which we sell things.

If SP > CP — Profit = SP – CP

If CP > SP — Loss = CP – SP

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qup

Profit and Loss % are always calculated on CP.

CP

Eg. CP = 12 SP = 15 **Profit % =** $\frac{3}{12} \times 100$

$= 25\%$

Eg. CP = 15 SP = 12 **Loss % =** $\frac{3}{15} \times 100$

$= 20\%$

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Basic scenario of Profit / Loss %.

	CP	SP	PROFIT/LOSS %
I	✓	✓	?
II	✓	?	✓
III	?	✓	✓

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Eg1. CP = 512 , SP = 192 ,
find profit/loss %.

$$\text{Loss} = 512 - 192$$

$$= 320$$

$$\text{loss\%} = \frac{320}{512_8} \times 100$$

$$= 62.5\%$$

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Eg2. $If \frac{CP}{SP} = \frac{4}{5}, find$

$(i) Profit$

$(ii) \text{Pr}\, o\, fit\%$

(i) CP → 4x

SP → 5x

Can't be determined

(ii) $\frac{x}{4x} \cdot 100 = 25\%$

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Eg3. If CP = 420, profit % = 15.
Find SP.

$SP = 420 + 15\%\text{ of } 420$

$420 + \frac{15}{100} \times 420$

$= 483$ Rs

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Eg4. If SP = 720, profit % = 25.
Find CP.

1/4

Better way

5 → 720

1 → 144

4 → 576

CP = 100% of CP

125% of CP = 720

5 → 125

4 → 100

CP = 720 × 4/5

CP = 144 × 4

= 576

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Eg5. If SP = 720, loss % = 25.
Find CP

$$CP = \frac{SP \times 100}{100 \pm (\text{Profit/Loss}\%)}$$

$$CP = \frac{720 \times 100}{75} = 960$$

Sol^{n}

Loss → 25% $\left(\frac{1}{4}\right)$

CP → 4 → 960

Loss → 1 → 240

SP → 3 → 720

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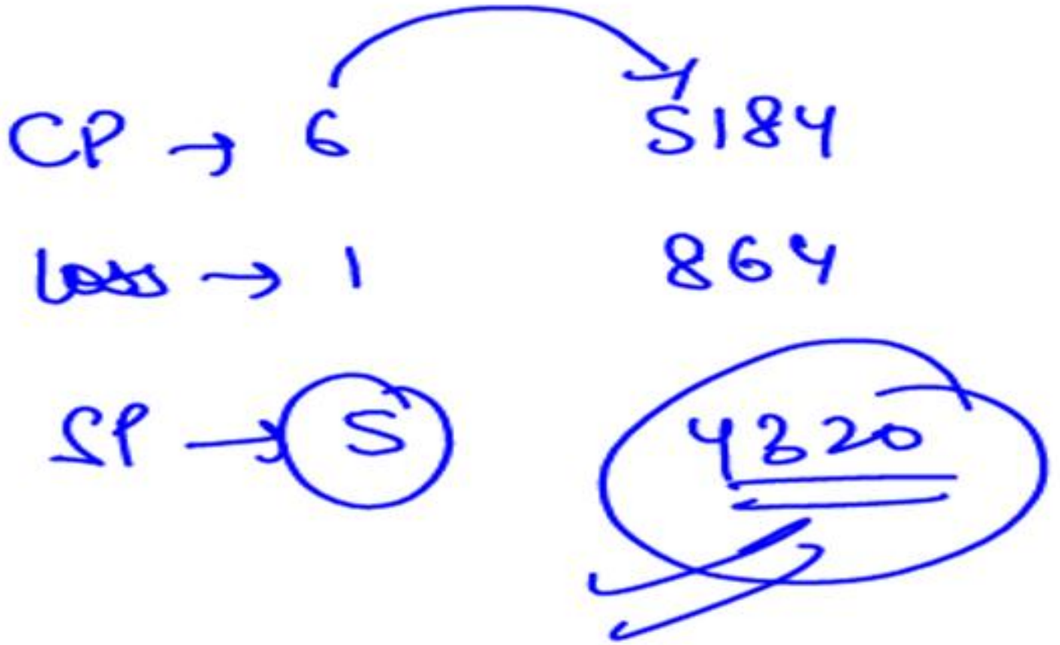
$16\frac{2}{3}\% = \left(\frac{1}{6}\right)$

Eg6. If CP = 5184, loss % = $16\frac{2}{3}$.

Find SP.



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Eg7. If SP = 1485, profit % = 37½.
Find CP.

Profit → $37\frac{1}{2}\% = \frac{3}{8}$

CP → 8

Profit → 3

SP → 11 → 1485

$135 \overline{)1485} \; 11 \times 8 = 1080$

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Q1. CP of 4 articles is equal to SP of 5 articles. Find profit/loss %.

eg

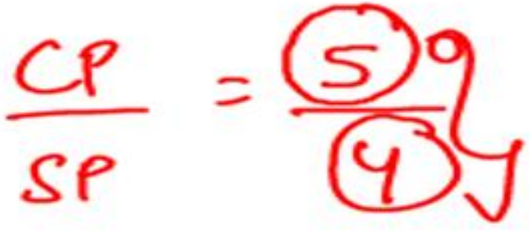
$7CP = 9SP$

$\frac{2}{9} \times 100$

$= 22\frac{2}{9}\%$

I st

$4CP = 5SP$



$\frac{1}{5} \times 100$

$= 20\%$ loss

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Ans. $28\frac{4}{7}\%$ **Profit**

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Eg. CP of 8 articles is equal to SP of 5 articles. Find profit/loss %.

CP = 5

SP = 8

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

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Q2 (a). By selling 300 articles a shopkeeper gains the cost price of 50 articles. Find his gain%.

I st

SP − CP = Profit

300 SP − 300 CP = 50 CP

$\overset{6}{300}SP = \overset{7}{350}CP$

CP = 6

SP = 7

$\frac{1}{6} \times 100 = 16\frac{2}{3}\%$ profit

II nd

Let CP of 1 article = 1 Rs

CP = 300 Rs

Profit = 50 Rs

$\frac{50}{300} \times 1 = 16\frac{2}{3}\%$

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Ans. $16\frac{2}{3}\%$ **Profit**

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Q2 (b). By selling 300 articles a shopkeeper losses the SP of 50 articles. Find the loss%.

CP − SP = Loss

300CP − 300SP = 50SP

6 7

300CP = 350SP

CP : 7
SP : 6

$\frac{1}{7} \times 100 = 14\frac{2}{7}\%$

Loss

Loss = 50SP

SP = 300

Loss = 50

CP = 350

$\frac{50}{350} \cdot 100$

$= 14\frac{2}{7}\%$ Loss

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Ans. $14\frac{2}{7}\%$ **loss**

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Given SP

20% profit

Q3 (a). If a person calculates his profit % on SP and according to him, his profit % is 20. Find his actual profit %.

Sol^{n}

20% (1 → profit, 5 → SP)

CP = 4

$\frac{1}{4} \times 100$

= 25% profit

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Ans. 25% profit

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Q3 (b). If a person calculates his loss % on SP and according to him, his loss % is 37.5. find his actual loss %.

Loss = 37.5%

3 → loss

8 → SP

CP = 11

$\frac{3}{11} \times 100$

$= 27\frac{3}{11}\%$ loss

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Ans. $27\frac{3}{11}\%$ **loss**

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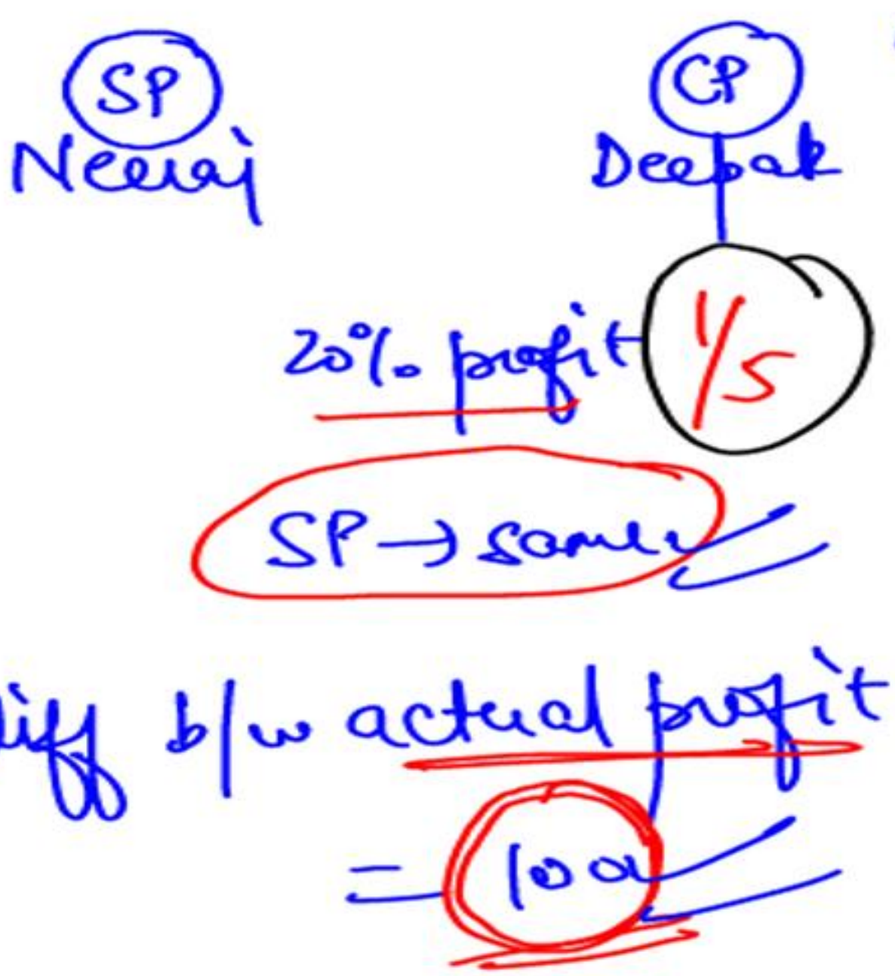

Q3 (c). There are 2 friends Neeraj and Deepak. Neeraj calculates his profit % on SP whereas Deepak calculates his profit % on CP. If both claim to make 20% profit and the difference between there actual profit is Rs.100 and the SP of both is same. Find their SP.

Neeraj

CP = 4 X 6

Profit = 1 X 6

SP = 5 X 6

Deepak

CP = 5 X 5

Profit = 1 X 5

SP = 6 X 5

1 → 100 Rs

30 → 3000 Rs

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Ans. Rs.3000

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Q4 (a). On selling an article at Rs.540, the profit obtained is twice of the loss incurred on selling the same article at Rs.360. Find the CP of article.

Ist

$SP_1 = 540$ $SP_2 = 360$

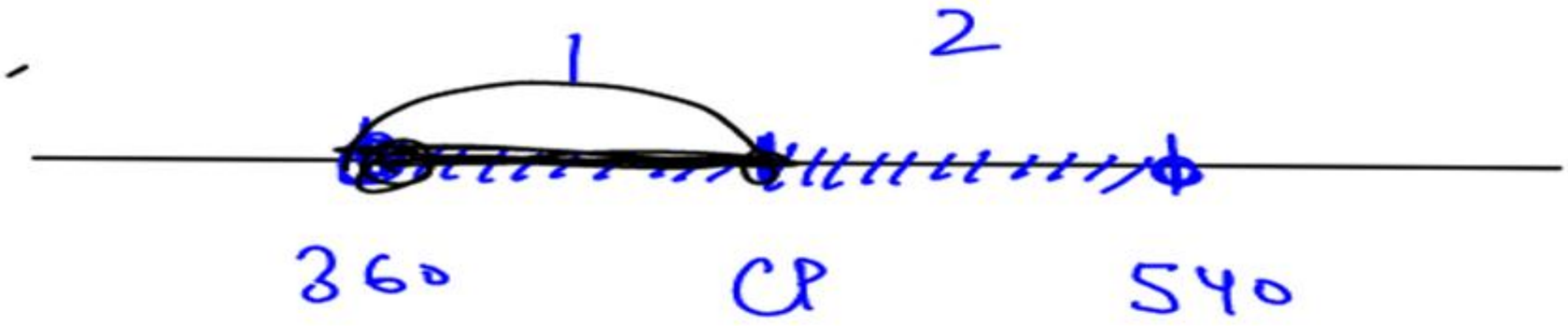
$CP = x$

Profit $= 540 - x$ loss $= x - 360$

$$(540 - x) = 2(x - 360)$$

$$3x = 1260$$

$$x = 420$$



$3 \rightarrow 180$

$1 \rightarrow 60$

$CP = \underline{\underline{420}}$

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Ans. Rs. 420

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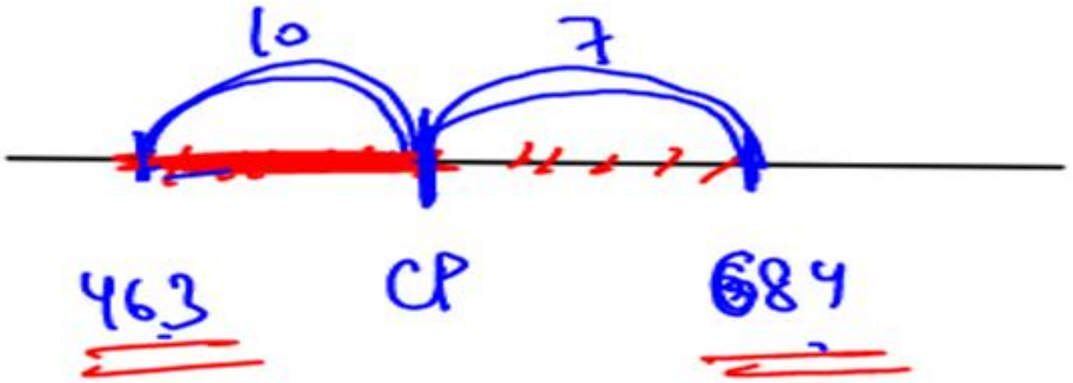

Q4(b). On selling an article at Rs.684, the profit obtained is 30% less then the loss incurred on selling the same article at Rs.463. Find the CP of article.

$17 \rightarrow 221$

$1 \rightarrow 13$

$463 + 130 = 593$

$30\% \left(\frac{3}{10}\right)$

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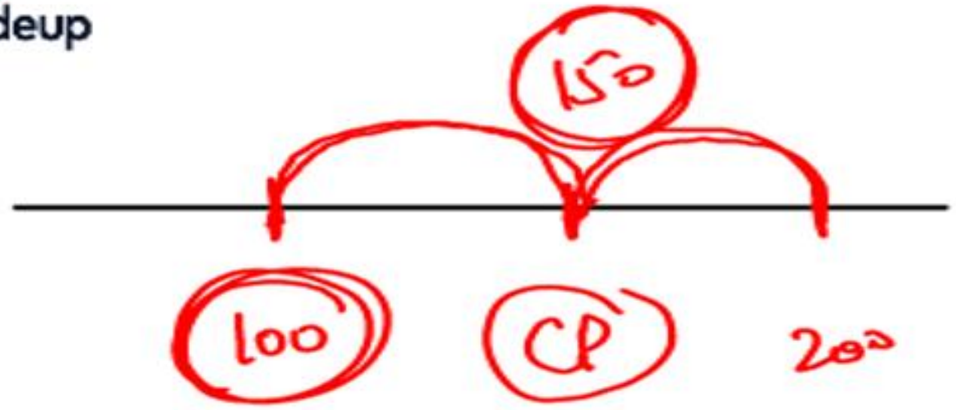
Ans. Rs.593



Q4 (c). If the selling price of an article is doubled, then its loss percent is converted into its profit%. Find the loss % on the article.

(a) 25%

(b) $26\frac{2}{3}\%$

(c) $33\frac{1}{3}\%$

(d) 40%

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Ans. (c)

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(1) If CP of two articles is same, one is sold at a profit of p% and other is sold at a loss of p%. Then in the overall transaction :

Neither profit nor loss

(2) If SP of two articles is same, one is sold at a profit of p% and other is sold at a loss of p%. Then in the overall transaction :

Loss of :

$$\frac{p^2}{100}\%$$

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Eg. CP of 2 articles is same. One is sold at a profit of 20% and other at a loss of 20%. Then in the overall transaction = ??

Neither Profit nor Loss

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SP → same

Loss = $\frac{(30)^2}{100}$

9% Loss

Eg. If SP of 2 articles is Rs. 35,843 each. One is sold at a loss of 30% and other is sold at a profit of 30%. Then in the overall transaction = ??

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I II

25% profit 20% loss

Q5 (a). If SP of two articles are same, one is sold at a profit of 25% and other is sold at a loss of 20%. Find his profit/loss %.

$CP_1 = 4 \times 4$ $CP_2 = 5 \times 5$

$SP_1 = 5 \times 4$ $SP_2 = 4 \times 5$

$CP = 41$

$SP = 40$

$\frac{1}{41} \times 100$

$2\frac{18}{41}\%$ loss

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Ans. $2\frac{18}{41}\%$ **loss**

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Profit $\left(16\frac{2}{3}\%\right)$ Loss $\left(11\frac{1}{9}\%\right)$

1/6 1/3

Q5 (b). If SP of two articles are same, one is sold at a profit of $16\frac{2}{3}\%$ and other is sold at a loss of $11\frac{1}{9}\%$. Find his profit/loss %.

$CP_1 = 6 \times 8$ $CP_2 = 9 \times 7$

$SP_1 = 7 \times 8$ $SP_2 = 8 \times 7$

CP = 111

SP = 112

$\frac{1}{111} \times 100$

$\frac{100\%}{111\%}$ profit

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Ans. $\frac{100}{111}\%$ **profit**

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Q5 (c). A person sold a house and a shop each for Rs. 72 lakhs. On selling the house, he gains 20% and on selling the shop he losses 20%. Find his overall profit/loss (in terms of Rupees).

120% of $CP_1 = 72$ lakh

$CP_1 = 60$ lakh

80% of $CP_2 = 72$ lakh

$CP_2 = 90$ lakh

$CP = 150$ lakh

$SP = 144$ lakh

Loss $\rightarrow$ 6 lakh

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Ans. Rs. 6,00,000 Loss

IInd

SP → Same

20% profit 20% loss

Overall → 4% loss

CP = 100 — 25

Loss = 4 — 1

SP = 96 — 24

6 Lakh

144 Lakh

SP → same

Profit = P%

Loss = P%

$SP_1 = x$

Profit = p%

$$CP_1 = \frac{100x}{100+p}$$

$SP_2 = x$

Loss = p%

$$CP_2 = \frac{100 \cdot x}{100-p}$$

$$CP = \frac{100x}{100+p} + \frac{100x}{100-p}$$

$$= \frac{20000x}{10000-p^2}$$

$SP = 2x$

$CP > SP$

$$\text{Loss} = \frac{2xp^2}{10000-p^2}$$

$$\text{Loss\%} = \frac{p^2}{100}$$