Key Notes

- When an article is sold at a profit of \( x \%) \). If it would be sold for Rs. \( n \) less, there would be a loss of \( y \%) \), then the cost price of the article \( C.P. \) is \( \frac{n \times 100}{x+y} \).

- A man sells an article at a gain of \( x \%) \). If it would have been sold for Rs. \( n \) more, there would \( \frac{n \times 100}{y-x} \) have a profit of \( y \%) \), then \( C. P. = \frac{y-x}{y} \).

- A person brought two articles for Rs \( n \). On selling one article at \( x \%) \) profit and other at \( y\%) \) profit, he get the same selling price of each, then
C.P. of first article
\[ = \text{Rs.} \frac{(100 + y) x}{200 + x + y} \]

C.P. of second article
\[ = \text{Rs.} \frac{(100 + x) y}{200 + x + y} \]

- When \( m \) articles are bought for Rs. \( n \) and \( n \) articles are sold for Rs. \( m \) and \( m > n \), then Profit
\[ \% = \frac{m^2 - n^2}{n^2} \times 100 \]

- If \( A \) sells an article to \( B \) at a profit of \( r_1 \) \%, \( B \) sells it to \( C \) at a profit of \( r_2 \) \% and \( C \) sells it to \( D \) at a profit of \( r_3 \) \%, then, Cost price of \( D \).

\[ \text{C.P. of } D = \text{C.P. of } A \left(1 + \frac{r_1}{100}\right) \left(1 + \frac{r_2}{100}\right) \left(1 + \frac{r_3}{100}\right) \]

- If \( A \) sells an article to \( B \) at a loss of \( r_1 \) \%, \( B \) sells it to \( C \) at a profit of \( r_2 \) \% and \( C \) sells it to \( D \) at a loss of \( r_3 \) \%, then, Cost price of \( D \) = Cost price of \( A \).

\[ \text{C.P. of } D = \text{C.P. of } A \left(1 - \frac{r_1}{100}\right) \left(1 - \frac{r_2}{100}\right) \left(1 - \frac{r_3}{100}\right) \]

- A dealer purchases a certain number of articles at \( x \) articles for a rupee and the same number at \( y \) articles for a rupee. He mixes them together and sells at \( z \) articles for a rupee.

\[ \text{Then his gain or loss } \% = \left[ \frac{2xy}{z(x+y)} - 1 \right] \times 100 \]

According to positive or negative sign.

- If 'P 1' is rate gain w r t selling price \( S_1 \) and 'P 2' is rate gain w r t selling price \( S_2 \)

\[ \text{Then, C.P.} = \left(\frac{100}{R_1 + P_2}\right)^x \]

Difference between selling prices.

- If 'P 1' is rate gain w r t selling price \( S_1 \) and 'P 2' is rate loss w r t selling price \( S_2 \)

\[ \text{C.P.} = \left(\frac{100}{R_1 + P_2}\right)^x \]

Difference between selling prices.

- When a man sells two things at the same price each and in this process his loss on first thing is \( x \) \% and gain on second thing is \( x \) \%, then in such a type question, there is always a loss.

\[ = \frac{2 \times \text{S.P.}}{\left(\frac{100}{x}\right)} - 1 \]

And Loss

- When a man buys two things on equal price each and in those things one is sold on the profit of \( x \) \% and another is sold on the loss of \( x \) \%, then there is no loss or no gain per cent.

- A sells an article at a profit of \( r_1 \) \% to \( B \). and \( B \) again sells it to \( C \) at a profit of \( r_2 \) \%. If \( C \)

\[ \text{A} = \text{Rs.} \frac{100 \times 100 \times P}{(100 + r_1)(100 + r_2)} \]

Pays Rs. \( P \) to \( B \), then, C. P. of the article for
• When a shopkeeper on selling an article for Rs. n, gains as much per cent as the cost price of it, then C.P. of the article $\text{C.P.} = \frac{\text{Rs.}\sqrt{25 + r}}{50\pm10\sqrt{25-r}}$

If there is loss in place of profit, then C.P. of the article $\text{C.P.} = \frac{\text{Rs.}\sqrt{25-r}}{50\pm10\sqrt{25+r}}$

• Discount\% = Discount / Marked price * 100\%

• An article sold at selling price(SP1) at a loss of x\% is to be sold at selling price(SP2) to gain y\%, then $\text{SP2} = \text{SP1}(100 + y) / (100 - x)$

• If selling an object for Rs.x a person loses a certain sum and selling for Rs.y he gains the same amount, CP is given by $\text{CP} = x + y / 2$.

• When the price of an article is reduced by p\% a man can buy x quantity of the article for Rs.y then

1. reduced price = $1/x (y * p / 100)$ per unit.

2. original price = reduced price * 100 / (100 - p).

• If the MP(marked price) of an article above CP is M\% and after allowing a discount of d\%, the gain is g\%, then $\text{M\%} = d + g * 100\% / 100 - d$, and if there is a loss of l\%, then $\text{M\%} = d - l * 100\% / 100 - d$.

• A person sells goods at a profit of x\%. Had he sold it for Rs. X more, y\% would have been gained. Then CP is given by Rs. $X * 100 / y - x$.

• A person sells goods at a loss of x\%. Had he sold it for Rs. X more, he would have gained y\%. Then CP is given by Rs. $X * 100 / y + x$.

• When there are two successive profits of x\% and y\% the net gain\% is given by: $\text{Net gain} = [x + y + \{xy / 100\}]\%$.

• When there are two successive losses of x\% and y\% the net loss\% is given by: $\text{Net loss} = [-x - y + \{xy / 100\}]\% \times 10$

• When there is a gain of x\% and a loss of y\% the net effect is given by: $\text{Net effect} = [x - y - \{xy / 100\}]\%$. 