4. If 'm' articles are given free on a purchase of 'n' articles then **Discount% =** $\frac{m}{n+m}$ **x 100**

5. If $C.P_{n\ articles} = S.P_{m\ articles}$, then **Profit/Loss% =** $\frac{m-n}{n}$ **x 100**

6. If a shopkeeper uses a false weight of 'x kg' instead of 'y kg' (where x < y) and professes to sell the article at the C.P, then his **Profit% =** $\frac{y-x}{x}$ **x 100**

7. If a shopkeeper uses a false weight of 'x kg' instead of 'y kg' (where x is **'k%'** less than y) and professes to sell the article at **'p%'** profit, then his **Actual Profit% =** $\frac{(p+k)}{(100-k)}$ **x 100**

Simple Interest & Compound Interest:

Principal (P): Money lent or borrowed

Rate of Interest (R): Percentage of Principal paid as interest. Generally, R is given yearly i.e. per annum

Time period (T): Duration for which the amount is lent or borrowed.

Amount (A): Total money paid to clear the principal as well as interest.

Simple Interest (S.I): When the interest is calculated only over the principal.

1. S.I = $\frac{P \times R \times T}{100}$

2. A = P + S.I

3. If an amount becomes 'k' times of itself when given at 'r%' rate of interest, then

R = (k-1) x $\frac{100}{k}$

Compound Interest (C.I): When the interest is calculated over the principal as well as interest also.

1. A = P x $(1 + \frac{R}{100})^T$

If nothing specific is mentioned then the interest would be compounded annually otherwise if the interested is compounded after every 'k' months then use $(\frac{kR}{12})$ instead of R and $(\frac{12T}{K})$ instead of T

2. C.I = A – P

3. If the amount for the n^{th} year and the $(n+k)^{th}$ year be 'x' and 'y' respectively, then

R = $[(\frac{y}{x})^{\frac{1}{k}}$ **- 1] x 100**

Hence, if the amount for two consecutive years be 'p' and 'q' then **R =** $\frac{(q-p)}{p}$ **x 100**

Difference between C.I and S.I:

1. $(C.I - S.I)_{1\ yr} = 0$

2. $(C.I - S.I)_{2\ yr} = P(\frac{R}{100})^2$

3. $(C.I - S.I)_{3\ yr} = 3P(\frac{R}{100})^2 + P(\frac{R}{100})^3$