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Vedic Mathematics

## INTRODUCTION

1. **Cost Price (C.P.)**

   The price at which an article is purchased is called its cost price.

2. **Selling Price (S.P.)**

   The price at which an article is sold is called its selling price.

3. **Profit (Gain)**

   If S.P. > C.P., then

   Profit = S.P. – C.P.

   ⇨ S.P. = Profit + C.P.

   And C.P. = S.P. – Profit

4. **Loss**

   If S.P. < C.P., then

   Loss = C.P. – S.P.

   ⇨ S.P. = C.P. – Loss

   And C.P. = S.P. + Loss

5. **Marked Price (M.P.)**

   The printed price or original price of an article is called the marked price (or list price).

6. **Discount**

   An amount deducted from the marked price of an article is called discount.

7. **Net Price**

   The amount paid by the customer for an article after deducting discount is called the net price (or selling price) (or cost price for the purchaser).

   NET PRICE (or Selling Price) = M.P. – Discount

8. **Cash Discount**

   The amount of discount offered by a wholesaler to a retailer, if the retailer marks the payment with in a stated time is called cash discount.

9. **Retail Discount**

   The amount by which a retailer reduces the price of an item to induce sales or to dispose of his old stock is called retail discount.

10. **Trade Discount**

    The discount offered by the manufacturers to the dealers is called trade discount.

11. **Gross Profit (Income)**

    The total profit (income) without deducting tax is called gross profit.

12. **Net Profit (Income)**

    The profit (income) after deducting tax is called net profit.



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## II. SHORT CUTS TO SOLVE THE PROBLEM OF PROFIT, LOSS, AND DISCOUNT

CASE I : Profit percentage is given by

$$\text{Profit \%} = \left(\frac{Amount\ of\ profit}{C.P.} \times 100\right)\%$$

Case II: Loss percentage is given by

$$\text{Loss \%} = \left(\frac{Amount\ of\ loss}{C.P.} \times 100\right)\%$$

Case III: If these is a profit of r%, then

S.P. = C.P. + profit = C.P. + r% of C.P

$= \text{C.P.} + \frac{r}{100}\text{ of C.P.} = \left(1 + \frac{r}{100}\right)\text{ of C.P.}$

$\text{S.P.} = \left(1 + \frac{r}{100}\right) \times C.P.$ and $\text{C.P.} = \frac{S.P}{\left(1+\frac{r}{100}\right)}$

Case IV : If there is a loss of r%, then

S.P. = C.P. + Profit = C.P. + r% of C.

$= \text{C.P.} - \frac{r}{100}\text{ of C.P.} = \left(1 - \frac{r}{100}\right)\text{ of C.P.}$

$\text{S.P.} = \left(1 - \frac{r}{100}\right) \times C.P.$ and $\text{C.P.} = \frac{S.P}{\left(1-\frac{r}{100}\right)}$

Case V : If on selling an article, there is a loss, then to obtain required gain, 2nd S.P. must be

$$2^{nd}\ \text{S.P.} = \left(\frac{100+gain\%}{100-loss\%}\right) \times 1st\ S.P.$$

(100 – loss %) : (1st S.P.) = (100 + gain %) : 2nd S.P.

Q. By selling a plot of land for Rs. 14,250, Anuj loses 5%. For how much should he have sold the plot to gain 15%.

a) 17,250 b) 17, 234

c) 17,556 d) 17, 334

Case VI : If same article is sold making successive profits and losses, then C.P. is given by

$$\text{C.P.} = \text{S.P.} \times \frac{100}{100+Profit_1} \times \frac{100}{100-Loss_1} \times \frac{100}{100+Profit_2} \times \frac{100}{100-Loss_2} \ldots$$

Q. Amit for sold a machine to Nithin at a profit of 10% and Nithin sold it to Rahul at a profit of 20%, but Rahul sold it to Manoj at a loss of 5%. If Manoj paid Rs. 627 the machine, find the cost price of machine for the Amit.



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a) 400 b) 500
c) 600 d) 200

CASE VII : To find C.P. of each article, if by selling one at profit % selling another at loss % provided there is no gain or loss at the whole transaction, we use

$$\frac{C.P. \text{of first article}}{C.P. \text{of second article}} =$$

Q. A man buys two horses for Rs. 1350. He sells one so as to lose 6% and the other so as to gain 7.5%. On the whole he neither gains nor loses then, what does each horse cost?

a) 600, 450 b) 340, 200
c) 400, 330 d) 750, 600

Case VIII : When the profit % on one article is equal to the loss % on other article sold at same S.P., then there is always a loss and given by

$$\text{Over all loss \%} = \left(\frac{\text{loss \% or gain \%}}{10}\right)^2 \%$$

Q. Atul sells two computers at the same price. On one he makes a profit of 15% and on the other he suffers he loss of 15 %. Find his gain or loss %.

a) 2.25% b) 2.34%
c) 2.44% d) 2.90%

Case IX : If an article is sold at two different selling price making profit/loss % or loss/profit % respectively then

$$\frac{S.P._1}{S.P._2} = \frac{100 \pm Profit \text{ or } Loss \text{ on first } S.P.}{100 \pm Profit \text{ or } Loss \text{ on second } S.P.}$$

Q. A person, by selling an article for Rs. 450, loses 20%. In order to make a profit of 20%, what price must he sell out?

a) 666 b) 476
c) 675 d) 447

CASE X : When two different articles sold at same S.P. at respective profit/gain %, then overall gain or loss % is given by

$$\text{Overall gain \% or loss \%} = \left[100 - \frac{2(100 \pm profit \text{ or } loss)(100 \pm profit \text{ or } loss)}{(100 \pm profit \text{ or } loss) + (100 \pm profit \text{ or } loss)}\right] \%$$

Q. Kamal sold two used scooters for Rs. 9000 each. By selling one at a gain of 20% and the other at a loss of 25%, how much % does he gain or loss in the whole transaction?

a) $7\frac{9}{13}\%$ b) $7\frac{9}{18}\%$
c) $7\frac{7}{13}\%$ d) $7\frac{9}{15}\%$

CASE XI: If there is some error in the scale for selling an article then


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$$\text{Gain \%} = \left[\frac{Error}{True\ value - Error} \times 100\right]\%$$

Q. A dishonest shopkeeper uses a weight of 960 gm for a Kg. wt to sell his goods. Find his gain percent.

a) $4\frac{1}{5}\%$ b) $4\frac{1}{6}\%$
c) $4\frac{1}{7}\%$ d) $4\frac{1}{8}\%$

CASE XII : If $d_1\%$, $d_2\%$ and $d_3\%$ be the three successive discounts on an article, then its S.P. is given by

$$\text{S.P.} = \text{Marked price} \times \frac{100-d_1}{100} \times \frac{100-d_2}{100} \times \frac{100-d_3}{100}$$

Q. A brass article is marked at Rs. 1500 with 10% and 20% off. During festival season, an additional discount of 3% is allowed for cash payment. Find the selling price of the article.

a) $Rs.1047.60$ b) $Rs.1077.60$
c) $Rs.1046.60$ d) $Rs.1043.60$

CASE XIII : Let E% be the single discount equivalent to successive discount of $d_1\%$ and $d_2\%$, then

$$E\% = \left(d_1 + d_2 - \frac{1}{100}d_1d_2\right)\%$$

Total discount = E% of the marked price

S.P.=(100 - E)% of list price

$$=\text{List price} \times \left(\frac{100-d_1}{100}\right)\left(\frac{100-d_2}{100}\right)$$

Discount = List price – Selling price

## Some important points

1) The gain or loss percent is always calculated on sot price
2) Overhead expenses like cartage, labour charge, transportation, commission, taxes etc. are also included in cost price
3) Discounts precent is always calculated on marked price (List Price)
4) Discount calculated on the amount which remain after deducting the first discount from the marked price, is called successive discount.
5) If there are two or more discount allowed successively to the list price of an article, they constitute a discount series
6) When the gain % on one article is equal to the loss % on other article sold at some price, then there is always a loss and selling price does not make any difference.


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## Practice Question

1) If CP is Rs 56.25 and Gain 20% then find SP?
a) 67.5% b) 57.5%
c) 67.25% d) 57.25%

2) If CP is Rs 80.40 and Loss 5% then find SP?
a) 74.28% b) 73.25%
c) 76.38% d) 72.28%

3) A shirt is bought for Rs. 400, if the shirt is sold at 15% profit, find its SP
a) 466 b) 470
c) 460 d) 446

4) A pair of sun – glasses marked at Rs. 65 were sold at a discount of 15%. Find the selling price.
a) Rs. 55.25 b) Rs. 55.90
c) Rs. 55. 30 d) Rs. 55.37

5) A shopkeeper buys 80 articles for Rs. 2,400 and sells them for a profit of 16%. Find the selling price of one.
a) 2784 b) 2635
c) 2754 d) 2378

6) During a sale, a shop offered a discount of 10% on the marked prices of all the items. What would a customer have to pay for a pair of jeans marked at Rs. 1450 and two shirts marked at Rs. 850 each?
a) 2715 b) 1783
c) 2835 d) 1155

7) The price of a TV is Rs. 13,000. The sales tax charged on it is at the rate of 12%. Find the amount that Vinod will have to pay if he buys it.
a) 12715 b) 21783
c) 11835 d) 14560

8) Rani bought a piece of cloth for 950 and Spends Rs 300 on designing at what price should she sell to make 30 % profit?
a) Rs 375 b) Rs 1250
c) Rs 1625 d) 1735

9) A man buys a cycle for Rs 1400 and sales it with a loss of 15%, What is the selling price?
a) Rs 1190 b) Rs 2020
c) Rs 1402 d) None of these

10) The cost of an article was Rs. 12750, Rs. 2250were spent on its repairs. If it is sold for a profit of 15%, find the selling profit of the article.
a) 2350 b) 2250
c) 2650 d) 17250

## Find the Cost Price, when selling price with %

11) If an article is sold at 10% profit, then selling price in terms of cost price is



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a) 10/11 b) 11/10
c) Rs.110 d) Rs. 90

12) IF SP is Rs 40.60 and Gain 16% then find CP?
a) 25 b) 35
c) 45 d) 15

13) If SP is Rs 51.70 and loss 12% then find Cp?
a) 68.25 % b) 78.75%
c) 58.75% d) 48.75%

14) Arun bought a pair of skates at a sale where the discount given was 20%. If the amount, he pays is Rs. 1,600, find the marked price.
a) 1000 b) 883
c) 1750 d) 2000

15) I purchased a hairdryer for Rs. 5,400 including 8% VAT. Find the price before VAT was added.
a) 5000 b) 6000
c) 2000 d) 4000

16) An article was purchased for ₹ 1239 including GST of 18%. Find the price of the article before GST was added?
a) 1702 b) 1050
c) 1016 d) 1306

17) If by selling an article for Rs. 390 a shopkeeper gains 20%, then the cost price is
a) Rs. 350 b) Rs. 325
c) Rs. 300 d) Rs. 370

18) Rita bought a television set with 20% discount on the labelled price. She made a profit of Rs.800 by selling it for Rs.16, 800. The labelled price of the set was
a) Rs.18, 000 b) Rs.20, 800
c) Rs.24, 000 d) Rs.20, 000

19) After allowing a discount of 25% on the C.P., an article was sold for Rs. 180. The cost price is
a) Rs. 200 b) Rs. 220
c) Rs.240 d) Rs. 300

20) The selling price of a pen is Rs. 9 when a shopkeeper gains 20%. The cost price of the pen is
a) Rs. 10.80 b) Rs. 8.80
c) Rs. 7.50 d) Rs. 9.00

21) A man buys an article at $\frac{3}{4}$ its value and sells it for 20% more than its value. His profit based on the cost
a) 45% b) 50%
c) 55% d) 60%


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## Find Percentage, Cost price and Selling price in the statement

22) A VCR and T.V. were bought for Rs. 8,000 each. The shopkeeper made loss of 4% on the VCR and a profit of 8% on the T.V. Find the gain or loss percent on the whole transaction.

a) 2% b) 3%
c) 5% d) 10%

23) A Shopkeeper sales one Radio for Rs 840 with a gain of 20% another for 960 with a loss of 4%. Its total gain or loss % is ?

a) $5\frac{15}{17}$% gain b) $5\frac{15}{17}$% loss

c) $4\frac{15}{17}$% gain d) $4\frac{15}{17}$% loss

23) By selling 45 oranges for Rs. 40, a man loses 20%. How many should be sold for Rs. 24 to gain 20% in the transaction?

a)16 b) 18
c) 20 d) 22

24) A man sold two watches Rs. 721 each. On one he gained 14% and on the other he lost 14%. His gain or loss percentage on the transaction is

a) 0% b) 1.96% loss
c) 28% loss d) None

25) Neeru bought two transistors Rs.510. She sold one at a loss of six percent and other at a gain 11%. If there is no loss or profit on the whole transaction, the C.P. of each transistor is

a) Rs.180, Rs. 330 b) Rs.200, Rs. 310
c) Rs.160, Rs.350 d) Rs.210, Rs. 300

## Find percentage Loss or Gain

26) A man buys an article for Rs 27.50 and sales it for Rs 28.60 find the gain or loss percentage?

a) 2% b) 4%
c) 5% d) 6%

27) IF a radio purchased for Rs 490 and sold for Rs 465.50 Find the loss or gain percentage?

a) 2% b) 4%
c) 5% d) 6%

28) A shopkeeper fixes the market price of an item 35% above its cost price the percentage allowed to gain 8%

a) 30% b) 20%
c) 40% d) 10%



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29) 100 Orange are bought at the rate of Rs 350 and sold at the rate of Rs 48 per dozen. Then find the loss or gain %?

a) $14\frac{2}{7}$% gain b) $14\frac{2}{7}$% loss

c) 15% gain d) 15% loss

30) Ajith purchased a TV set for 18000 and DVD player for 4000. He sold both items together for Rs 26400. How much of profit did he made?

a) 10% gain b) 10% loss

c) 20% gain d) 20% loss

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