

7. PROFIT AND LOSS

Cost Price:

The price, at which an article is purchased, is called its *cost price*, abbreviated as *C.P.*

Selling Price:

The price, at which an article is sold, is called its *selling price*, abbreviated as *S.P.*

Profit or Gain:

If *S.P.* is greater than *C.P.*, the seller is said to have a *profit* or *gain*.

Loss:

If *S.P.* is less than *C.P.*, the seller is said to have incurred a *loss*.

IMPORTANT FORMULAE

1. Gain = (S.P.) - (C.P.)
2. Loss = (C.P.) - (S.P.)
3. Loss or gain is always reckoned on C.P.
4. Gain Percentage: (Gain %)

$$\text{Gain \%} = \left(\frac{\text{Gain} \times 100}{\text{C.P.}} \right)$$

5. Loss Percentage: (Loss %)

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

6. Selling Price: (S.P.)

$$\text{SP} = \left[\frac{(100 + \text{Gain \%})}{100} \times \text{C.P.} \right]$$

7. Selling Price: (S.P.)

$$\text{SP} = \left[\frac{(100 - \text{Loss \%})}{100} \times \text{C.P.} \right]$$

8. Cost Price: (C.P.)

$$\text{C.P.} = \left[\frac{100}{(100 + \text{Gain \%})} \times \text{S.P.} \right]$$

9. Cost Price: (C.P.)

$$\text{C.P.} = \left[\frac{100}{(100 - \text{Loss \%})} \times \text{S.P.} \right]$$

10. If an article is sold at a gain of say 35%, then S.P. = 135% of C.P.

11. If an article is sold at a loss of say, 35% then S.P. = 65% of C.P.

12. When a person sells two similar items, one at a gain of say $x\%$, and the other at a loss of $x\%$, then the seller always incurs a loss given by:

$$\text{Loss \%} = \left(\frac{\text{Common Loss and Gain \%}}{10} \right)^2 = \left(\frac{x}{10} \right)^2.$$

13. If a trader professes to sell his goods at cost price, but uses false weights, then

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

Example: A damaged chair that cost Rs.110 was sold at a loss of 10%. Find the loss and the selling price.

Profit and Loss Based on Cost Price

To find the percent gain or loss, divide the amount gained or lost by the cost and multiply it by 100.

Example: A toy that cost 80 rupees is sold at a profit of 20 rupees. Find the percent or rate of profit.

Answer:

$$\text{Gain/cost} \times 100 = \% \text{ profit.}$$

$$20/80 \times 100 = 25\%. - \text{Answer}$$

To find the loss and the selling price when the cost and the percent loss are given, multiply the cost by the percent and subtract the product from the cost.

Answer:

$$\text{Cost} \times \text{percent loss} = \text{loss.}$$

$$110 \times 1/10 = 11, \text{ loss.}$$

$$\text{Cost} - \text{loss} = \text{selling price.}$$

$$110 - 11 = 99, \text{ selling price.}$$

Profit and Loss Based on Selling Price

To find the profit and the cost when the selling price and the percent profit are given, multiply the selling price by the percent profit and subtract the result from the selling price.

Example: A toy is sold for Rs. 6.00 at a profit of 25% of the selling price. Separate this selling price into cost and profit.

Answer :

Selling price x % profit = profit.

Selling price = profit + cost.

$6.00 \times .25 = 1.50$, profit.

$6.00 - 1.50 = 4.50$, cost.

To find the loss and the cost when the selling price and the percent loss are given, multiply the selling price by the percent loss and subtract the result from the selling price.

Example: At a sale, neckties selling at Rs. 50.00 are sold at a loss of 60% of selling price. What is the loss and the original cost?

Selling price x % loss = loss.

Selling price + loss = cost.

$50.00 \times .60 = 30.00$, loss.

$50.00 - 30.00 = 20.00$, cost.

To find the selling price when the cost and the percent loss are given, add the percent loss to 100% and divide the cost by this sum.

Example: Socks that cost 7.00 per pair were sold at a loss of 25% of selling price. What was the selling price?

Answer: Cost / (100% + % loss) = selling price.

$7.00 / 1.25 = 5.60$, selling price.

To find the selling price when the profit and the percent profit are given, or to find the selling price when the loss and

the percent loss are given, divide the profit or loss by the percent profit or loss.

Note: This rule should be compared with the one under Profit and Loss Based on Cost. The two rules are exactly similar except that in one case 100% represents cost while in the other case 100% represents selling price.

Example: A kind of tape is selling at a profit of 12% of selling price, equal to 18 per yard. What is the selling price of the tape?

Answer: Profit / % profit = selling price.

$18 / .12 = 1.50$ selling price.

To find the percent profit or loss, divide the amount gained or lost by the selling price.

Example: A candy bar sells for 1.30 at a profit of 65. What percent of profit on selling price does this represent?

Answer: Gain / selling price = % profit.

$65 / 1.30 = .5$ or 50% profit.

Mark-up Price

Generally the SP is less than the marked price (MP) the **difference MP – SP** is known as **discount, D**.

Discount = M P – S P

Discount %, D% = (Discount) / (M P) × 100

To reduce percent loss on cost to percent loss on selling price, divide percent loss on cost by 100% minus percent loss on cost.

Example: 20% loss on cost is what percent loss on selling price?

Answer:

(c) 15%

% loss on cost / (100% – % loss on cost) =
% loss on selling price.

(d) 75%

$0.20 / 80 = .0025$ or 25% loss on selling
price

Answer: (b) Gain per cent
$$= (40 - 25) / 25 \times 100$$

**To reduce percent loss on selling price to
percent loss on cost, divide percent loss on
selling price by 100% plus percent loss on
selling price.**

$$= 15 / 25 \times 100 = 60\%$$
shortcut methods

Example: 20% loss on selling price is what
percent loss on cost?

In Above question We take $x = 40$, $y = 25$

Then Gain % = $(x - y) \times 100 / y$

Answer:**Type2:**

% loss on selling price / (100% + % loss on
selling price) = % loss on cost.

**Bananas are bought at the rate of 6 for
Rs. 5 and sold at the rate of 5 for Rs. 6.
Profit per cent is: (CGL-2004)**

$.20 / 1.20 = .16666$ or .16.67% loss on cost.

(a) 36%

**To reduce percent mark-up (percent
profit on cost) to percent profit on selling
price, divide percent mark-up by 100%
plus percent mark-up.**

(b) 42%

(c) 44%

Example: A coat marked up 60% carries
what percent of profit on selling price?

(d) 48%

Answer : % profit on cost / (100% + %
profit on cost) = % profit on selling price.

Answer : (c) To avoid fraction, let the
number of bananas bought

$.60 / 1.60 = .375$ or 37.5% on selling price.

LCM of 5 and 6 = 30

CP of 30 bananas

Type 1:

$$= 5 \times 5 = \text{Rs. } 25$$

**The cost price of 40 articles is the same as
the selling price of 25 articles. Find the
gain per cent. (CGL-2012)**

SP of 30 Bananas = 6×6

$$= \text{Rs. } 36$$

(a) 65%

Profit = Rs. $(36 - 25) = \text{Rs. } 11$

(b) 60%

Profit %

$$= 11/25 \times 100 = 44\%$$

shortcut Method

$$[(6 \times 6 - 5 \times 5) / (5 \times 5)] \times 100 = 44\%$$

Type 3:

A man bought oranges at the rate of 8 for Rs 34 and sold them at the rate of 12 for Rs. 57. How many oranges should be sold to earn a net profit of Rs 45? (CGL-2011)

- (a) 90
- (b) 100
- (c) 135
- (d) 150

Answers: (a) Let the man buy 24 (LCM of 8 and 12) oranges.

$$\text{C.P. of 24 oranges} = 34/8 \times 24 = \text{Rs. } 102$$

$$\text{S.P. of 24 oranges} = 27/12 \times 24 = \text{Rs. } 114$$

$$\text{Gain} = 114 - 102 = \text{Rs. } 12$$

$$\text{Rs. } 12 = 24 \text{ oranges}$$

$$\text{Rs. } 45 = 24/12 \times 45 = 90 \text{ oranges}$$

Type 4:

A shopkeeper earns a profit of 12% on selling a book at 10% discount on printed price. The ratio of the cost price to printed price of the book is ? (CGL-2013)

- (a) 45 : 56
- (b) 50 : 61
- (c) 90 : 97

$$(d) 99 : 125$$

Answer: (a) C.P. of the book = Rs. x

Printed price = Rs. y

$$(y \times 90) / 100 = x \times 112 / 100$$

$$x/y = 90/112 = 45/56$$

Type 5:

A dealer sold two types of goods for Rs 10,000 each. On one of them, he lost 20% and on the other he gained 20%. His gain or loss per cent in the entire transaction was (CGL-2012)

- (a) 2% loss
- (b) 2% gain
- (c) 4% gain
- (d) 4% loss

Answers: (d) Here, S.P. is same, Hence there is always a loss. Loss per cent $= (20 \times 20) / 100 = 4\%$

shortcut Trick

$$\text{Loss \%} = (n^2) / 100 = (20)^2 / 100 = 4\%$$

Where $n = 20$

Type 6:

On selling an article for Rs170, a shopkeeper loses 15%. In order to gain 20%, he must sell that article at rupees: (CGL-2013)

- (a) 215.50
- (b) 212.50

(c) 240

(d) 210

Answer ; (c) C.P. of article =
 $(200 \times 120) / 100 = \text{Rs. } 240$

Type 7:

An article is sold at a loss of 10%. Had it been sold for Rs. 9 more, there would have been a gain of 12 1/2% on it. The cost price of the article is (CGL – 2002)

(a) Rs. 40

(b) Rs. 45

(c) Rs. 50

(d) Rs. 35

Answers: (a) Let the cost price of the article = Rs. x

S.P. at 10% loss

$$= x \times 90 / 100 = \text{Rs. } 9x / 10$$

1. P. at 12 1/2 % gain

$$x \times (100 + 12 \frac{1}{2}) / 100 = \text{Rs. } 225x / 200$$

According to the question

$$9x / 10 + 9 = 225x / 200$$

$$180x + 1800 = 225x$$

$$x = \text{Rs. } 40$$

Type 8:

A sells a suitcase to B at 10% profit. B sells it to C at 30% profit. If C pays Rs

2860 for it, then the price at which a bought it is (CGL-2013)

(a) 1000

(b) 1600

(c) 2000

(d) 2500

Answer: (c) If the C.P. of the suitcase for A be Rs. x, then

$$x \times 110 / 100 \times 130 / 100 = 2860$$

$$x = (2860 \times 100 \times 100) / (110 \times 130) = \text{Rs. } 2000$$

Type 9:

Arun marks up the computer he is selling by 20% profit and sells them at a discount of 15%. Arun's net gain percent is

(CGL-2013)

(a) 4

(b) 2

(c) 3.5

(d) 2.5

Answer (b)**shortcut method:**

$$r_1 = 20, r_2 = 15$$

$$\text{Formula} = r_1 - r_2 - (r_1 \times r_2) / 100$$

$$(20 - 15 - (20 \times 15) / 100)$$

$$= 20 - 18 = 2\%$$

Type10:

A tradesman sold an article at a loss of 20%. If the selling price had been increased by Rs. 100, there would have been a gain of 5%. The cost price of the article was: (CGL-2004)

- (a) Rs. 200
 (b) Rs. 25
 (c) Rs. 400
 (d) Rs. 250

Answer (c) Let the C.P. of article be Rs. x.

$$105\% \text{ of } x - 80\% \text{ of } x = \text{Rs. } 100$$

$$25\% \text{ of } x = \text{Rs. } 100$$

$$x = \text{Rs. } (100 \times 100) / 25$$

$$= \text{Rs. } 400$$

- **Cost Price of Particle is 100%**
Selling Price of Particle is 130%
Profit of Particle after Selling 30%
- **Formula: Gain % = (Gain x 100/C.P)**

Example 1: P sells a item to Q at a profit of 20% and Q sells it to R at a profit of 25%. If R pays Rs 225 for it. Find the cost price for it.

Answer : Required price is = $100 \times 100 \times 225 / 120 \times 125 = \text{Rs. } 150$

Example 2: A boy purchased an item for Rs.80 and sold it for Rs.100. What would be his % profit ?

Answer : CP of the item = Rs. 80

SP of the item = Rs. 100

Profit of the boy $100 - 80 = \text{Rs.}20$

% profit = profit x 100 / CP

%p = $20 \times 100 / 80 = 25\%$

Trick : % p = $20 \times 100 / 80 = 25\%$

Example 3: If selling price of an item is $6/5$ of its cost price than what would be profit in that ?

Answer : Let Cost Price is X.

Selling Price is $6X / 5$

Gain = $6X / 5 - X = X / 5$

Gain% = $X \times 1 \times 100 / 5 \times X = 20\%$

Example 4: A shopkeeper bought 80 kg of onion for Rs. 640 and sold the whole onion at the price of Rs. 8.50/kg. What would be his gain percent ?

Answer : Cost price 1 kg = $640 / 80 = \text{Rs. } 8$

Selling price = of 1 kg = 8.50

gain% = $0.50 \times 100 / 8 = 6.25\%$

Example 4: A shopkeeper sells one radio for Rs.840 at a gain of 20% and another for Rs.1056 a loss of 4%. What would be his total gain or loss percent ?

Answer : C.P of first radio is = Rs. $(100 \times 840 / 120) = \text{Rs.}700$

C.P of 2nd radio is = Rs. $(100 \times 1056 / 96) = \text{Rs.}1100$

Total S.P = $840 + 1056 = 1896$

Profit = $(1896 - 1800) = \text{Rs.}96$

Profit % = $96 \times 100 / 1800 = 5.33\%$.

Example 5: By selling an item for Rs. 250, gains Rs. 50. what would be his gain % ?

Answer : Cost price of an Item is $(250 - 50) = \text{Rs.}200$

So, Profit % = $50 \times 100 / 200 = 25\%$.

Example 6:

By selling an item For Rs.260 one gains Rs. 20, Then What would be her gain % ?

Answer:

Cost price = $260 - 20 = \text{Rs.}240$.

Profit% = $20 \times 100 / 240 = 8.33\%$.

Example 7: Sabir purchase an article for Rs.40 and sells it for Rs. 60. Find his gain percent.

Answer: C.P = 40 and S.P = 60.

Gain = $60 - 40 = 20$.

Gain % = $20 \times 100/40 = 50\%$

So, his gain percent is 50%

Example 8: Rana purchase an ball for Rs.80 and sells it for Rs. 100. Find his gain percent.

Answer: C.P = 80 and S.P = 100.

Gain = $100 - 80 = 20$

Gain % = $20 \times 100/80 = 25\%$

So, his gain percent is 25%.

Example 9: A farmer purchase an article for Rs.25 and sells it for Rs. 28. Find his gain percent.

Answer: C.P = 25 and S.P = 28.

Gain = $28 - 25 = 3$

Gain % = $3 \times 100/25 = 12\%$

So, his gain percent is 12%.

Example 10: A untruthful retailer sell his product at cost price however uses a weight of 950 grams for a kg weight. Find his gain percent.

Answer : we apply gain% formula

1 Kg = 1000 grams.

Profit of untruthful retailer = $(1000 \text{ grams} - 950 \text{ grams}) = 50 \text{ grams}$.

Gain% = $[(\text{Error} \times 100) / (\text{True Value}) - (\text{Error})] \%$

$50 \times 100 / 950 = 100 / 19\%$

So, his gain percent is 100 / 19%.

Example 11: A dishonest wholesaler sell his goods at a cost price and use weight of 800 gm instead of kilogram weight. what profit he is make ?

Answer : $200 \times 100 / 800 = 25\%$.

Example 12: A women went to shop to bought chocolate at 6 for a rupee. To gain 20% profit how many for a rupee she sail ?

Answer : Cost price 6 chocolate 1 rupee.

So, To Gain 20% of 1 rupee = $100 / 120 = 5 / 6$.

= $5 \times 6 / 6 = 5$.

To gain 20% profit she sail for a rupee of 5.

Example 13: Sunita bought a TV for Rs.18000, and sold it by Rs.22000, How much profit she get ?

Answer : $(22000 - 18000) = 4000$.

profit she get = $4000 \times 100 / 18000 = 200 / 9 = 22.222222222\%$.

So, his gain profit is 22.222222222%.

Example 14: Nilesh in his shop mixes rice of 22 Kg at Rs. 18 per kg of with other type rice of 24 Kg of Rs. 16 er kg. and sell the new mixture of Rs. 20 per kg. What would be his profit percent ?

Answer: $22 \times 18 + 24 \times 16 = (396 + 384) = 780$.

Total kg of rice = $22 + 24 = 46$

selling price is = $(46 \times 20) = 920$.

profit = $(920 - 780) = 140$.

profit % = $140 \times 100 / 780 = 17.95\%$.

Example 15: Samir bought a car at 11 / 15 of its selling price and after that sold it at 15% more then its selling price. What would be his gain ?

Answer: Let Selling price be x Rs.

Cost price is $11 / 15 x$,

sold it more 15% that is = 115% of Rs x is = $115 / 100 = 23 / 20x$.

So gain = $23 / 20 - 11 / 15 = 5 / 12$.

So gain% is = $5 \times 15 \times 100 / 12 \times 11 = 625 / 11 \%$.

Example 16: Some goods item was purchased at 7 for Rs. 6 and that is sold at 6 for Rs. 7. What would be the gain percent ?

Answer: So, Number of goods was

purchase = We need to do is L.C.M of 7 and 6 = 42.

So Cost price 42 goods item = $\text{Rs } 6 \times 42 / 7 = 36$.

Selling Price of 42 goods item is = $7 \times 42 / 6 = 49$.

So gain = $(49 - 36) = 13$

gain% is = $13 \times 100 / 36 = 325/9\%$.

Example 17:

Find her gain or loss percent if a women purchase oranges at 5 for Rs. 4 and sold them at 4 for Rs 5.

Answer : Let she purchase number of oranges L.C.M of 5 & 4

Cost price = Rs. $(4 \times 20 / 5) = \text{Rs. } 16$

So, Selling price = Rs. $(5 \times 20 / 4) = \text{Rs. } 25$

Profit = $25 - 16 / 16 = 9/16$

So, gain percent = $(9 \times 100/16)\% = 56.25\%$

- **Loss percent Shortcut tricks**

Formula: Loss% = (Loss x 100/C.P)

Example 1: A Sunglasses is sold at the price of Rs. 770 and gained profit 10%. If it sold at the price of 680 then Find the profit and loss.

Answer : Cost Price = $100 \times 770 / 110 = 700$

C.P = Rs. 700

Loss = $700 - 680 = \text{Rs. } 20$

Example 2: A boy sold his two mobile each at Rs. 1800. On 1st mobile he loss 10% and on 2nd mobile he gained 10%. What would be his total loss % or profit % ?

Answer : There is always loss in this type of case.

Loss % = $10^2 / 100 = 1$.

Example 3: A girls purchase a book for Rs. 200 and sell it for Rs 180. What would be her loss percent ?

Answer : loss % = loss x 100 / CP

$(200 - 180) = 20$

$20 \times 100 / 200 = 10\%$.

Example 4: Monty bought a Led Tv and a smart phone for Rs. 16,000/- and Rs.

12,000/-. He sold his Led Tv a loss of 10% and mobile at a Profit of 6%. What is his overall loss/profit ?

Answer : Total Cost price = $(16000 + 12000) = 28,000$.

Selling price of Tv = $16,000 \times 90 / 100 = 14,400$.

Selling price of mobile = $12,000 \times 106 / 100 = 12,720$.

Total selling price = $(14,400 + 12,720) = 27,120$.

So, **Loss** = $(28,000 - 27,120) = 880$.

Example 5: Amit loss 20% on mobile selling price, What percent loss he made on the cost price ?

Answer : Suppose Selling price is Rs. 100. if loss 20% then cost price Rs. 120.

So, Loss% = $(20 \times 100 / 120)\% = 16.66\%$.

Example 6:

A man purchased a toy for Rs. 120 and sold it for Rs. 90, Find the loss Percent.

Answer :

C.P = 120 and S.P = 90

So We Know the formula of Loss = C. P - S.P.

Loss = $(120 - 90) = 30$

Loss% = $30 \times 100/120 = 25\%$

So, the loss Percent is 25%.

Example 7:

Anil purchased a mobile for Rs. 12000 and sold it for Rs. 8000, Find the loss Percent.

Answer :

C.P = 12000 and S.P = 8000

So We Know the formula of Loss = C. P - S.P.

Loss = $(12000 - 8000) = 4000$.

%Loss = $4000 \times 100/12000 = 33.33\%$.

So, the loss Percent is 33.33%.

Example 8:

10% loss on selling price is what percent loss on the cost price ?

Answer :

consider selling price be = Rs.100, Then loss = Rs.10

Cost price = Rs.(100 + 10) = 110
 So, loss% = (10 / 110 x 100) = 100 / 11 %

Example 9:

A farmer purchased a cow for Rs. 200 and sold it for Rs. 180, Find the loss Percent.

Answer :

C.P = 200 and S.P = 180

So We Know the formula of Loss = C.P – S.P . Loss = (200 – 180) = 20

%Loss = 20 x 100 / 200 = 10%.

So, the loss Percent is 10%.

Example 10: Sachin sold his mobile for Rs. 6600 and gain 10%. What will his gain or loss per cent if it sold at price for Rs. 5640 ?

Answer : Cost price of mobile = 6600 x 100 / 110 = 6000.

if sold at Rs.5640 then (6000 – 5640) = 360

loss % = 360 x 100 / 6000 = 6%.

Example 11: Anil bought an mobile phone for Rs.6500 and he sold it to suresh at 25% loss, He again bought another mobile and sold it at 20% profit. Find his profit or loss.

Answer : bought price is Rs. 6500

Selling price of mobile = 6500 x 75 x 120 / 100 x 100 = 5850

Loss = (6500 – 5850) = 650/-

Example 12: Harish sold his two sunglasses for Rs. 750 each. On one he loss 15% and on another he gained 15%. How much does he gain or loss ?

Answer : Remember point : In this type cases there is always loss arises,

Formula : Loss% = (Common loss and gain% / 10)²

(15 / 10)² % = (3 / 2)² % = 9 / 4 = 2.25%

Example 13: Ajit bought 11 apples for Rs. 12 and sells 12 apples Rs.11. How much profit or loss he make ?

Answer :

Short cut tricks :

% profit or loss = (11 x 11 – 12 x 12) x 100 / 12 x 12 = - 2300 / 144 = - 15.97%.

Sign is negative or -ve so, He makes loss of -15.97%.

Find selling Price Profit and Loss Shortcut tricks

Formula: S.P = (100+Gain%)/100 x C.P.

Example 1: If badminton at a price ranging from Rs. 250 to 285 are sold at price ranging from Rs. 375 to 480. What would be the possible profit that might made in selling nine books ?

Answer : Cost price = 250 x 9 = Rs.2250

Selling Price = 480 x 9 = Rs.4320

Profit = (4320 – 2250) = Rs.2070

Example 2: Sunny bought a mobile for Rs. 1560/- and then he sold it at loss of 15% of the cost price, Find the selling price of mobile.

Answer : (100 – 15)% = 85%

1560 x 85 / 100 = 1326.

Example 3: On selling a profit earned on item for Rs. 750 is double the loss incurred when sold it Rs. 350. At what price should the item be sold to make 25% profit ?

Answer : Let the cost price is X.

Then, (750 – X) = 2(X – 350)

= 750 – X = 2X – 750

3X = 1500

X = 500

To make 25% profit selling price should be = 500 x 125 / 100 = Rs.625

Example 4: We can find the Selling Price of article Using this above Formula

If C.P of a product is a Rs. 180, Gain = 30%, then Find the S.P.

Answer: S.P = ?

S.P = 130% of Rs. 180, Gain = (100+30) = 130, (130 / 100 x 180) = Rs. 234

So, Selling Price is Rs. 234

Shortcut Tricks

$$130/100 \times 180 = 234.$$

•

$$\text{Formula: S.P} = (100 - \text{Loss}\%) / 100 \times \text{C.P}$$

Example 5: If C.P of a product is a Rs. 180 , Loss = 30%, then Find the S.P.

Answer: S.P. = ?

$$\text{S.P} = 70\% \text{ of Rs. } 180, \text{ Loss} = (100 - 30) = 70, (70/100 \times 180) = \text{Rs. } 126$$

So the Selling Price is Rs. 126

Shortcut Tricks

$$70/100 \times 180 = 126$$

Example 6:

Rajan bought a bike for Rs.60,000 and spent Rs. 4000 on repair and Rs. 1000 on transport and sold it with 25% profit. What price did he sell the car ?

Solution:

Cost price =Rs. 60,000 Spent on repair =Rs. 4000 transport =Rs. 1000 and profit 25%
So, Cost price =Rs.(60,000 + 4000 + 1000) = Rs. 65,000

$$\text{So, Selling price} = \text{Rs. } 65,000 \times 125 / 100 = 81250.$$

Example 7: Niraj sold an item for Rs. 8500/- and he got loss on this 15%, To gain 15% profit At what price should he sold the item ?

Solution : Cost price of item is = $8500 \times 100 / 85 = 10000.$

$$\text{Selling price is } 10000 \times 115 / 100 = 11500.$$

Shortcut tricks: $8500 \times 100 \times 115 / 85 \times 100 = 11500.$

Example 8: Sushil purchase 25 candy's for a rupee, how many must be he sold for a rupee that he gain 25% ?

Solution : If he wants to profit 15% then he should sell less number of candy.

$$\text{Shortcut tricks: } 100 \times 25 / 125 = 20$$

If he sold 20 candy's then he gain 25% profit.

Example 9: Raman sold his old bike for Rs. 18000/- and he got loss on this 25%, To gain 25% profit At what price should he sold the bike ?

Solution : Cost price of bike is $18000 \times 100 / 75 = 24000.$

$$\text{Selling price is } 24000 \times 125 / 100 = 30000.$$

Shortcut tricks: $18000 \times 100 \times 125 / 75 \times 100 = 30000.$

Example 10: A Mobile price Rs 6500 was sold at a loss of 20%. Find the selling price of mobile.

Solution : Shortcut tricks: $6500 \times 80 / 100 = 5200.$

Selling price of mobile is 5200.

Example 11: Manoj bought 140 Kg of apple at Rs. 60/Kg. After that he spent Rs.100 on carrier, paid Rs.100 for packaging. He gain 6% on it, What would be the selling price per dozen ?

Solution : $(140 \times 60) + 100 + 100 = 8600.$
 $8600 \times 106 / 100 = 9116.$

$$\text{Selling price per dozen} = 9116 / 140 = 65.114285714.$$

Example 12: A watch price Rs 1600 was sold at a profit of 16%. Find the selling price of mobile.

Solution : Shortcut tricks: $1600 \times 116 / 100 = 1856.$

Selling price of mobile is 1856.

Example 13: In a showroom list price of an item is 6500 and shopkeeper sell it at successive discount price of 15% and 10%, What would be its net selling price ?

Solution : Shortcut tricks: $6500 \times 85 \times 90 / 100 \times 100 = 4972.5.$

- **Find cost price Profit and Loss Shortcut tricks**

Formula: C.P = 100 x S.P/(100+Gain%).

Example 1: Nitin got a profit of 20% on selling an item for Rs. 5400/-. What was the cost price of that item ?

Answer : $5400 \times 100 / 140 = 4500$.

Example 2: If S.P of a article is Rs. 240, then Gain 20%, Find the C.P.

Answer: C.P.= ?

$$\text{C.P.} = 100 \times 240 / (100 + 20) = 24000 / 120 = 200$$

$$\text{C.P.} = 200$$

shortcut Tricks:

$$100 \times 240 / (120) = 200.$$

Formula: C.P = 100 x S.P/(100 – Loss%).

Example 3: If S.P of a article is Rs. 240, then Loss 20%, Find the C.P.

Answer: C.P. = ?

$$\text{C.P.} = 100 \times 240 / (100 - 20) = 24000 / 80 = 300$$

shortcut Tricks:

$$100 \times 240 / 80 = 300.$$

Example 4: Anil sells a mobile to samir at the profit of 15% and samir Sell it to Tonny at the profit 20%, And If Tonny paid for Rs 345. Find the cost price of Anil ?

Answer:

Shortcut tricks : $345 \times 100 \times 100 / 115 \times 120 = 250$

Example 5: Amit sold balls for Rs 180, if he loss of 10%. What is the cost price of the ball ?

Answer: C.P = Rs. $100 \times 180 / 90 = 200$

Example 6: Samar sells a item to suresh at the profit of 10% and suresh Sell it to tanmoy at the profit 25%, And If Tanmoy paid for Rs 550. Find the cost price of samar ?

Answer:

Shortcut tricks : $550 \times 100 \times 100 / 110 \times 125 = 400$

Example 7: Nilam Sold an item at the profit of 16%, If she sold that item For Rs 12 more then he will get 18% gained, Find the cost price of the mobile ?

Answer:

Short cut tricks formula : Cost price = gained percentage profit x 100 / both percentage profit in difference

Short cut tricks : $18 \times 100 / 18 - 16 = 900$

Example 8: Harris sold his watch at profit of 18%. If selling price and cost price both are 120 less, then more profit would be 6%. What would be its cost price ?

Answer:

If selling price and cost price both are less by same amount.

Shortcut tricks: (increasing profit percent + primary profit percent) x Amount / increasing profit percent

(18 + 6) x 120 / 6 = 2880 / 6 = 480

Example 9: Nitin Sold his mobile at the profit of 12%, If he sold his mobile For Rs 25 more then he will get 16% gained, Find the cost price of the mobile ?

Answer:

Short cut tricks formula : Cost price = gained percentage profit x 100 / both percentage profit in difference

Short cut tricks : $16 \times 100 / 16 - 12 = 400$

Example 10: jitten earns a profit of 20% on selling an item for Rs.2640/-. What is the cost price of the item ?

Answer:

Shortcut : $100 \times 2640 / 120 = \text{Rs.}2200$
cost price of the item Rs.2200.

Example 11: The shop owner marked his goods 25% more then the cost price, A customer paid Rs. 7850 for wooden dressing table. What is the cost price of wooden

dressing table ?

Answer :

Shortcut : $7850 \times 100 / 125 = \text{Rs. } 6280$
cost price of wooden dressing table Rs.
6280.

**Profit and Loss Hard Example - Math
Shortcut Tricks**

Example 1: Sanjay invest Rs.36000/- to start a business. 4 month later subham joined him and invested Rs.64000/- and another 2 month later Sonali joined them both with Rs. 40000/-, At end of the year they earned profit from business Rs.14800/-. Find the share of profit of shubham.

Answer : Shortcut:

Sanjay : subham : Sonali = $36000 \times 12 : 64000 \times 8 : 40000 \times 6 = 27 : 32 : 15$
Share of profit of shubham $14800 \times 32 / 74 = \text{Rs.}6400/-$.

Example 1: What would be the equality discount of 50% and 26% ?

Answer : Let the marginal price be = Rs.100

Net selling price is = $100 \times 50 \times 74 / 100 \times 100 = \text{Rs.}37$

Required discount is = $(100 - 37)\% = 63\%$

Example 2: Bikash Rs 6500/- sold a mobile and loss 10%, to gained 20% profit on it What price should he sold that mobile ?

Answer :

Short cut : $6500 \times 100 \times 120 / 80 \times 100 = 9750$
he sold that mobile Rs. 9750.

Example 3: Mr. Prakash purchase an Led Tv for Rs. 18000/- And sold it after a year it for Rs. 22500/-. What is the profit percent ?

Answer : $22500 - 18000 = 4500$
 $4500 \times 100 / 18000 = 2.5\%$.

Example 4 :

If the C.P is 75% of the selling price, then

What is the profit percent ?

Answer :

Let S.P = Rs 100,

Then C.P = 75

Profit = Rs 25

Profit% = ?

= $25 \times 100 / 75$

= $100 / 3 = 33.3$

Profit % = 33.3

Example 5 :

Find the single discount equivalent to a series discount of 30%, 20% and 10%.

Answer :

Let price be Rs. 100.

Then Net S.P = $(90 \times 80 \times 70 / 100 \times 100 \times 100) \times 100$

= $36 \times 7 / 5$

= $252 / 5$

= 50.4

Required Discount is = $(100 - 50.4) = 49.6$

Example 6 :

A Farmer purchased a cow and carriage for Rs. 3500. He sold the cow at a gain of 35% and the carriage at loss of 10%, So gaining 2% on the entire. Find the cost of the cow.

Answer :

We consider C.P of the cow Rs. x

Then C.P of the Carriage Rs. $(3500 - x)$

So,

$35\% \text{ of } x - 10\% \text{ of } (3500 - x) = 2\% \text{ of } 3500$

$(35x / 100) - 10(3500 - x) / 100 = 2 \times 3500 / 100$

$(7x / 20) - (3500 - x) / 10 = 70$

$5x - 7000 = 1400$

$5x = 1400 + 7000$

$x = 8400 / 5$

$x = 1680$.

the cost of the cow is 1680.

Example 7: Puja sold her mobile for Rs 2650/- and earned a profit 25%, What is the cost price of the mobile ?

Answer:

Short cuttricks : $2650 \times 100 / 125 = 2120$

Example 8: Anil invest in a business Rs. 56000/- , After that four month later Bikash join and investing Rs. 62000/- and another friend 2 month later Dinesh join them and investing Rs. 60000/-, at end of 1 year they earn the profit of Rs. 28650/-, Find dinesh the share of profit ?

Answer:

$$56000 \times 12 = 672000$$

$$62000 \times 8 = 496000$$

$$60000 \times 6 = 360000$$

$$672000 : 496000 : 360000$$

$$84 : 62 : 45$$

$$(84 + 62 + 45) = 191$$

$$28650 \times 45 / 191 = 6750$$

dinesh the share of profit 6750.

Example 9: Sachin sell some portion of 100 kgs of rice at 16% profit and remaining portion sells at 26% profit. If total profit percent is 20 then what is the quantity sold by him at 6% profit ?

Answer :

Short cut tricks :

$$16 \quad 26$$

$$20$$

$$6 \quad 4$$

The ration is 6 : 4

So the required quantity of 6% is = $100 \times 6 / 10 = 60$ kg

Example 10: Difference between 65% of a number and 45% of the same number is 3260. What is 65% of that number ?

Answer:

$$65\% - 45\% = 3260$$

$$20\% = 3260$$

So 65% of that number is =
 $3260 \times 65 / 20 = 10595$.

The number is 10595.

Example 11 : Souman bought an item for Rs. 6500/- and sold it 25% loss. after that he purchase from that money another item and sold it at 20% profit. What is his total profit ?

$$\text{Answer : } 6500 \times 75 \times 120 / 100 \times 100 = 5850$$

$$6500 - 5850 = 650.$$

Some other examples:

Example 1: An item marked at Rs 60 is sold for Rs.48. So the rate of discount is:

$$\text{Answer : } (12 \times 100 / 60) \% = 20\%.$$

Example 2: Sushil bought a Tv with an extra discount of 20% on the reduced price, and then deducted 10% from on marked price. If marked price was 2400, What price did he buy that TV ?

Answer :

Shortcut tricks:

$$\text{Cost price of Tv} = 2400 \times 80 \times 90 / 100 \times 100 = 1728.$$

Example 3:

If the cost price of 14 pens is equal to the selling price of 8 pens, the gain percent is :

Answer :

Let C.P of each pen is Rs. 1 Then,

C.P of 8 pens = Rs. 8 : S.P price of 8 pens = Rs.14

$$\text{Gain \%} = 6 \times 100 / 8 = 75\%$$

the gain percent is 75%.

Example 4: On Selling 16 pens, a Hole seller making a profit equal to the selling price of 6 pens, What would be the his profit percent ?

Answer : Selling price of 16 pens – cost price of 16 pens = selling price of 6 pens

cost price of 16 pens = selling price of 10 pens

Let cost price of each pens Rs. 1.

So, Cost price of 10 pens = Rs. 10

Selling price of 10 pens = Rs. 16.

gain% = $(6 \times 100 / 10)\% = 60\%$

Example 5: Souman bought a cycle with an extra discount of 20% on the reduced price, and then deducted 10% from on marked price. If marked price was 2400, What price did he buy that cycle?

Answer :

Shortcut tricks:

Cost price of Tv = $2400 \times 80 \times 90 / 100 \times 100 = 1728$.

Example 6:

The Profit gained by selling an item for Rs.630 is equal to the loss incurred if the same article is sold for Rs. 370. To gain 50% profit what would be the sale price ?

Answer:

Let C.P price be x

Then

$$630 - x = x - 370$$

$$2x = 1000$$

$$x = 500$$

Required S.P = 150% of 500

$$= 150 \times 500 / 100$$

$$= 750$$

the sale price for making 50% profit is 750.

Example 7: A item is sold with 15% discount on the listed price and gave profit of Rs. 86. What should its cost price ?

Answer: because the marked price has not given so that's why we cannot be determined.

Example 8: A shop keeper mixes 25 kg of sugar at Rs. 22 per kg with 35 kg of sugar of other type at Rs. 42 per kg and then sells that mixture at Rs. 35 per Kg. What would be his profit percent ?

Answer:

Cost price of 60 kg sugar = Rs. $(25 \times 22 + 35 \times 42) = (550 + 1400) = 2020$

and Selling price of 60 kg sugar is = Rs $(60 \times 35) = 2100$

So, gain % = $80 \times 100 / 2020 = 3.96\%$.

Example 9:

On selling 15 book at Rs. 640, there is a loss equal to the cost price of 5 books. What would be the cost price of a book ?

Answer:

$$(C.P. \text{ of } 15 \text{ books}) - (S.P. \text{ of } 15 \text{ books}) = (C.P. \text{ of } 5 \text{ books})$$

$$C.P. \text{ of } 10 \text{ books} = S.P. \text{ of } 15 \text{ books} = \text{Rs.}640.$$

$$C.P. \text{ of } 1 \text{ books} = \text{Rs.}(640 / 10) = \text{Rs. } 64.$$

Example 10: Some Apples were bought at 7 Apples for Rs. 6 and sold at 6 Apples for Rs. 7. What would be Gain percent ?

Answer : So, Number of Apples bought = L.C.M. of 7 and 6 = 42.

$$C.P. \text{ of } 42 \text{ Apples} = \text{Rs.}6 \times 42 / 7 = \text{Rs.}36.$$

$$S.P. \text{ of } 42 \text{ Apples} = \text{Rs.}7 \times 42 / 6 = \text{Rs.}49.$$

$$\text{Gain \%} = (15 \times 100 / 36) \% = 41.66\%.$$