Profit, Loss & Discount

Cost Price

The amount paid to purchase an article or the price at which an article is made, is known as its cost price.

The cost price is abbreviated as C.P.

Selling Price

The price at which an article is sold, is known as its selling price.

The selling price is abbreviated as S.P.

Profit

If the selling price (S.P.) of an article is greater than the cost price (C.P.), then the difference between the selling price and cost price is called profit.

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

$$\text{Profit} = \text{S.P.} - \text{C.P.} \Rightarrow \text{S.P.} = \text{C.P.} + \text{Profit}$$

$$\Rightarrow \text{C.P.} = \text{S.P.} - \text{Profit}.$$

Loss

If the selling price (S.P.) of an article is less than the cost price (C.P.), then the difference between the cost price (C.P.) and the selling price (S.P.) is called loss.

Thus, if S.P. < C.P., then

$$\text{Loss} = \text{C.P.} - \text{S.P.} \Rightarrow \text{C.P.} = \text{S.P.} + \text{Loss}$$

$$\Rightarrow \text{S.P.} = \text{C.P.} - \text{Loss}$$

Profit and Loss Percentage

The profit per cent is the profit that would be obtained for a C.P. of ₹ 100.

Similarly, the loss per cent is the loss that would be made for a C.P. of ₹ 100.

$$\text{Profit per cent} = \frac{\text{Profit}}{\text{C.P.}} \times 100$$

$$\text{Loss per cent} = \frac{\text{Loss}}{\text{C.P.}} \times 100$$

Remember...

- $\text{Profit} = \dfrac{\text{C.P.} \times \text{Profit \%}}{100}$
- $\text{Loss} = \dfrac{\text{C.P.} \times \text{Loss \%}}{100}$
- $\text{S.P.} = \left(\dfrac{100 + \text{Profit\%}}{100}\right) \times \text{C.P.}$
- $\text{S.P.} = \left(\dfrac{100 - \text{Loss\%}}{100}\right) \times \text{C.P.}$
- $\text{C.P.} = \dfrac{100 \times \text{S.P.}}{100 + \text{Profit \%}}$, if S.P. > C. P.
- $\text{C.P.} = \dfrac{100 \times \text{S.P.}}{100 - \text{Loss \%}}$, if S.P. < C. P.

Note

(i) If an article is sold at a certain gain (say 45%), then SP = (100 + 45)% of CP = 145% of CP.

(ii) If an article is sold at certain loss (say 25%), then SP = (100 – 25) % of CP = 75% of CP.

Marked Price

The price printed on the item or printed on the lable pasted on the item is called the marked price or list price.

The marked price is abbreviated as M.P.

Discount

The reduction made on the 'marked price' of an article is called the discount.

When no discount is given, 'selling price' is the same as 'marked price'.

- Discount = Marked price × Rate of discount.
- S.P. = M.P. – Discount.
- $\text{Discount \%} = \dfrac{\text{Discount}}{\text{M.P.}} \times 100$.
- Buy x get y free i.e., if $x + y$ articles are sold at cost price of x articles, then the percentage discount = $\dfrac{y}{x+y} \times 100$.

Sales Tax

To meet government's expenditures like construction of roads, railway, hospitals, schools etc. the government imposes different types of taxes. Sales tax (S.T.) is one of these tax.

Sales tax is calculated on selling price (S.P.)

Note

If discount is given on selling an article, then selling price of this article is calculated after discount first and then sales tax is calculated on the new selling price of the article.

Remember...

(i) When there are two successive profits of a% and b%, then the resultant profit per cent is given by

$$\left(a+b+\frac{ab}{100}\right)\%$$

(ii) When there are two successive loss a% and b%, then the resultant loss per cent is given by $\left(-a-b+\frac{ab}{100}\right)\%$

(iii) When there is a profit of a% and loss of b% in a transaction, then the resultant profit or loss per cent is given by $\left(a-b-\frac{ab}{100}\right)\%$, according to the +ve or –ve sign respectively.

(iv) When cost price and selling price are reduced by the same amount (A) and profit increases then cost price

$$(\text{C.P.}) = \frac{[\text{Initial profit}\% + \text{Increase in profit}\%]\times A}{\text{Increase in profit}\%}$$

(v) If cost price of x articles is equal to the selling price of y articles, then profit/loss percentage $= \frac{x-y}{y}\times 100\%$, according to +ve or –ve sign respectively.

(vi) If on selling x objects, a person get the profit equal to selling price of y objects, then profit $\% = \frac{y}{x-y} \times 100$

(vii) A man purchases a certain number of articles at x a rupee and the same number at y a rupee. He mixes them together and sells them at z a rupee. Then his gain or loss $\% = \left[\frac{2xy}{z(x+y)}-1\right]\times 100$ according as the sign is +ve or –ve.

(viii) If two items are sold, each at ₹ x, one at a gain of p% and the other at a loss of p%, there is an overall loss given by $\frac{p^2}{100}$%. The absolute value of the loss is given by $\frac{2p^2x}{100^2-p^2}$.

(ix) If CP of two items is the same and % loss on one item is same as % gain on the other item, then net loss or net profit is zero.

(x) A businessman sells his items at a profit/loss of a%. If he had sold it for ₹ R more, he would have gained/lost b%. Then,

$$\text{CP of items} = \frac{R}{b\pm a}\times 100$$

'–' = When both are either profit or loss

'+' = When one is profit and other is loss

(xi) If A sold an article to B at a profit (loss) of r_1 % and B sold this article to C at a profit (loss) of r_2 %, then cost price of article for C is given by

$$(\text{cost price for } A) \times \left(1\pm\frac{r_1}{100}\right)\left(1\pm\frac{r_2}{100}\right).$$

'+' sign will be taken for profit and '–' sign is taken for loss.

(xii) If a man purchases m items for ₹ x and sells n items for ₹ y, then Profit or loss per cent is given by

$$\frac{my-nx}{nx}\times 100\%$$

[Positive result means profit and negative result means loss].

(xiii) If a^{th} part of some items is sold at x% loss, then required gain per cent in selling rest of the items in order that there is neither gain nor loss in whole transaction, is

$$\frac{ax}{1-a}\%$$

EXERCISE

1. During month-long annual sale, a shopkeeper sells his goods at a discount of 50%. But in the last week, he offers an additional discount of 40%. If the original price of a shirt is ₹ x, then the price, (in rupees) during the last week of the sale will be
(a) 90% of x (b) 70% of x
(c) 30% of x (d) 10% of x

2. A shop offers 10% discount on every purchase of an article. It also offers an additional discount of 12%, if the payment is made in cash. If the original price of an item is ₹ 250, how much a customer will pay. If he wants to pay the price is cash?
(a) ₹ 180 (b) ₹ 192
(c) ₹ 198 (d) ₹ 195

3. Jesmine allows 4% discount on the marked price of her goods and still earns a profit of 20%. What is the cost price of a shirt if its marked price is ₹ 850?
(a) ₹ 650 (b) ₹ 720
(c) ₹ 700 (d) ₹ 680

4. A shopkeeper allows a discount of 10% on the marked price of an item but charges a sales tax of 8% on the discounted price. If the customer pays ₹ 3,402 as the price including the sales tax, then the marked price is
(a) ₹ 3,400 (b) ₹ 3,500
(c) ₹ 3,600 (d) ₹ 3,800

5. Ramesh marks his goods 30% above cost price. If he sells the item for ₹ 910 after allowing of 15% discount find his cost price.
(a) ₹ 823.5 (b) ₹ 758
(c) ₹ 814.2 (d) ₹ 856.5

6. A shopkeeper bought 30 kg of wheat at the rate of ₹ 45 per kg. He sold forty percent of the total quantity at the rate of ₹ 50 per kg. Approximately, at what price per kg should he sell the remaining quantity to make 25 per cent overall profit?
(a) ₹ 54 (b) ₹ 52
(c) ₹ 50 (d) ₹ 60
(e) ₹ 56

7. 'A' bought a certain quantity of oranges at total cost of ₹ 1200. He sold 1/3rd of those oranges at 20% loss. If A earns an overall profit of 10%, at what percent profit did A sell the rest of the oranges?
(a) 16% (b) 15%
(c) 22% (d) 25%
(e) 20%

8. Two mobile phones were purchased at the same price. One was sold at a profit of 30% and the second was sold at a price which was ₹ 2500 less than the price at which the first was sold. If the overall profit earned by selling both the mobile phones was 5%, what was the cost price of one mobile phone?
(a) ₹ 8000 (b) ₹ 5000
(c) ₹ 6000 (d) ₹ 4500
(e) ₹ 5500

9. The cost prices of two beds are equal. One bed is sold at a profit of 25% and the other one for ₹ 6596 less than the first one. If the overall profit earned after selling both the beds is 8%, what is the cost price of each bed?
(a) ₹ 20,400 (b) ₹ 19,800
(c) ₹ 18,600 (d) ₹ 19,400
(e) ₹ 16,800

10. Profit earned by an organization is distributed among officers and clerks in the ratio of 5 : 3 respectively. If the number of officers is 45 and the number of clerks is 80 and the amount received by each officer is ₹ 25,000, what was the total amount of profit earned?
(a) ₹ 22 lakhs (b) ₹ 18.25 lakhs
(c) ₹ 18 lakhs (d) ₹ 23.25 lakhs
(e) None of these

11. The percentage profit earned when an article is sold for ₹ 558 is double the percent profit earned when the same article is sold for ₹ 504. If the marked price of the article is 30% above the cost price, what is the marked price of the article?
(a) ₹ 585 (b) ₹ 595
(c) ₹ 624 (d) ₹ 590
(e) ₹ 546

12. The cost price of article A is ₹ 200 more than the cost price of article B. Article A was sold at 10% loss and article B was sold at 25% profit. If the overall profit earned after selling both the articles is 4%. What is the cost price of article B?
(a) ₹ 450 (b) ₹ 550
(c) ₹ 400 (d) ₹ 500
(e) ₹ 300

13. The cost price of article A is ₹ 100 more than the cost price of article B. Article A was sold at 40% profit and article B was sold at 40% loss. If the overall profit earned after selling both the articles is 5%. What is the cost price of article B?
(a) ₹ 300 (b) ₹ 400
(c) ₹ 250 (d) ₹ 350
(e) ₹ 850

14. A trader sells an item to a retailer at 20% discount, but charges 10% on the discounted price, for delivery and packaging. The retailer sells it for ₹ 2046 more, thereby earning a profit of 25%. At what price had the trader marked the item?
(a) ₹ 9400 (b) ₹ 9000
(c) ₹ 8000 (d) ₹ 12000
(e) ₹ 9300

15. A dealer allowed a discount of 25% on the marked price of ₹ 12000 on an article and incurred a loss of 10%. What discount should he allow on the marked price so that he gains ₹ 440 on the article?
(a) 11% (b) 13%
(c) 19% (d) 15%
(e) None of these

16. Ravi ate in a restaurant and got a membership discount of 30% on the original bill amount but he had to pay 10% as service tax and 8% service charge on the discounted bill amount. If Ravi paid ₹ 4,743, which included a tip of ₹ 200, how much money did he give as service charge?
(a) ₹ 324 (b) ₹ 314
(c) ₹ 296 (d) ₹ 308
(e) ₹ 272

17. On a ₹ 10,000 payment order, a person has choice between 3 successive discounts of 10%, 10%, and 30%, and 3 successive discounts of 40%, 5% and 5%. By choosing the better one he can save (in ₹):
(a) 200 (b) 255
(c) 400 (d) 433

18. A shopkeeper marks his goods at such a price that after allowing a discount of 12.5% on the marked price, he still earns a profit of 10%. The marked price of an article which costs him ₹ 4,900 is
(a) ₹ 5,390 (b) ₹ 6,160
(c) ₹ 5,490 (d) ₹ 6,260

19. The total cost price of two watches is ₹ 840. One is sold at a profit of 16 percent and the other at a loss of 12 percent. There is no loss or gain in the whole transaction. The cost price of the watch on which the shopkeeper gains, is
(a) ₹ 360 (b) ₹ 370
(c) ₹ 380 (d) ₹ 390

20. One trader calculates the percentage of profit on the buying price and another calculates on the selling price. When their selling prices are the same, then the difference of their actual profits is ₹ 85 and both claim to have made 20% profit, what is the selling price of each?
(a) ₹ 1700 (b) ₹ 2100
(c) ₹ 2550 (d) ₹ 2750

21. A person sold a TV for ₹ 9,400 then he lost a particular amount. When he sold another TV of the same type at ₹ 10,600, his gain was double the former loss. What was the cost price of each TV ?
(a) ₹ 9,800 (b) ₹ 10,000
(c) ₹ 10,200 (d) ₹ 10,400

22. A person bought some articles at the rate of 5 per rupee and the same number at the rate of 4 per rupee. He mixed both the types and sold at the rate of 9 for 2 rupees. In this business he suffered a loss of ₹ 3. The total number of articles bought by him was
(a) 1090 (b) 1080
(c) 540 (d) 545

23. A person sold an article at 20% profit on the selling price. After wards, when the cost price reduced by 10%, then he also reduced the selling price by 10%. His percentage of profit on cost price will be
(a) 30 (b) 25
(c) 22.5 (d) 12.5

24. A fruit seller buys 240 apples for ₹ 600. Some of these apples are bad and are thrown away. He sells the remaining apples at ₹ 3.50 each and makes a profit of ₹ 198. The % of apples thrown away are?
(a) 6% (b) 5% (c) 4% (d) 7%

25. A sells a car priced at ₹ 36,000. He gives a discount of 8% on the 1st ₹ 20,000 and 5% on the remaining ₹ 16,000. *B* also sells a car of the same make, period at ₹ 36,000. He gives a discount of 7% on the total prices. Calculate the actual prices charged by *A* and *B* for the cars.
(a) *A* = ₹ 33,500; *B* = ₹ 33,400
(b) *A* = ₹ 33,450; *B* = ₹ 33,650
(c) *A* = ₹ 33,480; *B* = ₹ 33,600
(d) *A* = ₹ 33,600; *B* = ₹ 33,480

26. A shopkeeper has 11 books of same cost price. He sells the first book at certain price, then he sells second book at a price which is ₹ 1 less than the selling price of first book and then he sells third book at a price which is ₹ 1 less than the selling price of second book. Following this pattern, he sold all 11 books. If he sells sixth book at its cost price. Find the overall percent profit or loss on selling all 11 books.
(a) 20% (b) 10%
(c) $\frac{1}{11}$% (d) No profit no Loss

27. Arun buys one kilogram of apples for ₹ 120 and sells it to Swati gaining 25%. Swati sells it to Divya and Divya again sells it for ₹ 198, making a profit of 10%. What is the profit percentage made by Swati?
(a) 25% (b) 20%
(c) 16.67% (d) 15%

28. Anand marks up the price of an article by 50% and then allows a discount of 20% and sells it to Balaji who sells it for ₹ 20 more than what he purchased for, this S.P is 30% more than the original C.P. of the article. Then Balaji's profit % is
(a) 7.5% (b) 6.66%
(c) 8.33% (d) 9%

29. If a person purchases a shirt, he gets 6% discount. However, if he purchases two shirts, he gets 5% on the first and 8% on the second. If the price paid by the person for two shirts is ₹ 925, then what will be the marked price of each shirt?
(a) ₹ 494 (b) ₹ 550
(c) ₹ 528 (d) ₹ 500

30. A man sells a bicycle at marked price which is 30% higher than the cost price. If he gives some discount and sells it at ₹ 150 less than the marked price, he would still gain 20%. What is the percentage of discount offered?
(a) 7.69% (b) 1.83%
(c) 7.54% (d) 7.23%

Hints & Solutions

1. (c) Single equivalent discount

$$= \left(50 + 40 - \frac{50 \times 40}{100}\right)\% = 70\%$$

$\therefore$ Required price of shirt

$= (100 - 70)\%$ of $x = 30\%$ of x

2. (c) M.P. of an item = ₹ 250

Cash Price of an item

$$= \frac{88}{100} \times \frac{90}{100} \times 250 = ₹\ 198$$

3. (d) C.P. of the shirt

$$= 850 \times \frac{96}{100} \times \frac{100}{120} = ₹\ 680$$

4. (b) Let marked price = 100

$$100 \xrightarrow[\text{Discount}]{10\%} 90 \xrightarrow[\text{Tax}]{8\%} \text{S.P (including tax)}\ 97.2$$

97.2 units = ₹ 3,402

$$1 \text{ unit} = \frac{3402}{97.2}$$

$$100 \text{ units} = \frac{3402}{97.2} \times 100 = 3500$$

5. (a)

C.P.	S.P.	M.P.
$10 \times_{20}$		$13 \times_{20}$
	$17 \times_{13}$	$20 \times_{13}$
200 unit	221 unit	260 unit

221 unit ——— 910

$$200 \text{ unit} \text{ ——— } \frac{910}{221} \times 200 = ₹\ 823.5$$

6. (d) Cost price of 30 kg of wheat

$= 30 \times 45 = ₹\ 1350$

Total SP for an overall profit of 25%

$$= \frac{1350 \times 125}{100} = ₹\ 1687.5$$

$$\text{SP of 12 kg} = \left(\frac{30 \times 40}{100}\right) \text{ of wheat}$$

$= 12 \times 50 = ₹\ 600$

Expected SP of 18 kg of remaining wheat

$= 1687.5 - 600 = ₹\ 1087.5$

$$\text{Required selling price per kg} = \frac{1087.5}{18} = ₹\ 60$$

7. (d) Let C.P. of each orange be ₹ 100.

$\therefore$ Number of oranges $= \frac{1200}{100} = 12$

According to the question,

$$\text{S.P. of 12 oranges} = \frac{1200 \times 110}{100} = ₹\ 1320$$

4 oranges are sold on 20% loss.

$$\therefore \text{ Their S.P.} = \frac{400 \times 80}{100} = ₹\ 320$$

$\therefore$ Required S.P. of remaining 8 oranges

$= 1320 - 320 = ₹\ 1000$

$\therefore$ Required profit percent

$$= \left(\frac{1000 - 800}{800}\right) \times 100 = 25\%$$

8. (b) Let the C.P. of each mobile phone be ₹ x.

According to the question,

$$\frac{x \times 130}{100} + \frac{x \times 130}{100} - 2500 = \frac{2x \times 105}{100}$$

$$\Rightarrow \frac{260x}{100} - \frac{210x}{100} = 2500$$

$$\Rightarrow \frac{50x}{100} = 2500$$

$$\Rightarrow x = \frac{2500 \times 100}{50} = ₹\ 5000$$

9. (d) C.P. of each bed = ₹ x (let)

According to the question,

$$\frac{x}{4} + \frac{x}{4} - 6596 = \frac{2x \times 8}{100} = \frac{4x}{25}$$

$$\Rightarrow \frac{x}{2} - \frac{4x}{25} = 6596 \quad \Rightarrow \frac{25x - 8x}{50} = 6596$$

$$\Rightarrow 17x = 6596 \times 50$$

$$\Rightarrow x = \frac{6596 \times 50}{17} = ₹\ 19400$$

10. (d) Profit received by each officer = ₹ 25000

$\therefore$ Profit received by each clerk

$$= \frac{3}{5} \times 25000 = ₹\ 15000$$

$\therefore$ Total earned profit = ₹ $(45 \times 25000 + 80 \times 15000)$

= ₹ (1125000 + 1200000) = ₹ 23.25 lakh

11. (a) Difference of S.P. = ₹ (558 – 504) = ₹ 54

$\therefore$ C.P. of article = ₹ (504 – 54) = ₹ 450

$\therefore$ Marked price of article = ₹ $\left(\frac{450 \times 130}{100}\right) = ₹\ 585$

12. (c) C.P. of article $B = ₹\, x$

$\therefore$ C.P. of article $A = ₹\,(x + 200)$

According to the question,

$$\frac{x\times 25}{100} - \frac{10}{100}(x+200) = (2x + 200) \times \frac{4}{100}$$

$$\Rightarrow \quad \frac{x}{4} - \frac{x}{10} - 20 = \frac{8x+800}{100}$$

$$\Rightarrow \quad \frac{x}{4} - \frac{x}{10} - \frac{8x}{100} = 20 + 8 = 28$$

$$\Rightarrow \quad \frac{25x-10x-8x}{100} = 28 \Rightarrow \frac{7x}{100} = 28$$

$$\Rightarrow \quad x = \frac{28\times 100}{7} = ₹\,400$$

13. (d) C.P. of article $B = ₹\, x$

C.P. of article $A = ₹\,(x + 100)$

According to the question,

$$(x + 100) \times \frac{40}{100} - \frac{x\times 40}{100} = (2x + 100) \times \frac{5}{100}$$

$$\Rightarrow \quad 40x + 4000 - 40x = 10x + 500$$

$$\Rightarrow \quad 10x = 4000 - 500 = 3500$$

$$\Rightarrow \quad x = \frac{3500}{10} = ₹\,350$$

14. (e) Let the price marked by the trader be $₹\, x$.

$\therefore$ S.P. of article

$$= ₹\left(x \times \frac{80}{100} \times \frac{110}{100}\right) = ₹\,\frac{22x}{25}$$

For the retailer.

$$\text{S.P.} = ₹\left(\frac{22x}{25} \times \frac{125}{100}\right) = ₹\,\frac{11x}{10}$$

According to the question,

$$\frac{11x}{10} - \frac{22x}{25} = 2046 \quad \Rightarrow \quad \frac{55x-44x}{50} = 2046$$

$$\Rightarrow \quad 11x = 2046 \times 50 \quad \Rightarrow \quad x = \frac{2046\times 50}{11} = ₹\,9300$$

15. (b) C.P. of article $= ₹\, x$ (let)

$$\therefore \quad \frac{12000\times 75}{100} = \frac{x\times 90}{100}$$

$$\Rightarrow \quad x = \frac{12000\times 75}{90} = ₹\,10000$$

Again, profit $= ₹\,440$

$\therefore$ S.P. $= 10000 + 440 = ₹\,10440$

Discount $= 12000 - 10440 = ₹\,1560$

If discount $= x\%$, then

$$\frac{12000\times x}{100} = 1560$$

$$\Rightarrow \quad x = \frac{1560\times 100}{12000} = 13\%$$

16. (d) Let the bill after 30% discount be $₹\, x$

According to the question,

$$\frac{x\times 118}{100} = 4743 - 200$$

$$\Rightarrow \quad \frac{x\times 118}{100} = 4543$$

$$\Rightarrow \quad x = \frac{4543\times 100}{118} = ₹\,3850$$

$\therefore$ Service charge $= \frac{3850\times 8}{100} = ₹\,308$

17. (b) Selling price in the first case

$= 70\%$ of 90% of 90% of $₹\,10000$

$$= \frac{70}{100}\times\frac{90}{100}\times\frac{90}{100}\times 10000 = ₹\,5670$$

Selling price in the second case

$= 95\%$ of 95% of 60% of $₹\,10000$

$$= \frac{95}{100}\times\frac{95}{100}\times\frac{60}{100}\times 10000 = ₹\,5415$$

$\therefore$ Saving $= ₹\,(5670 - 5415) = ₹\,255$

18. (b) SP of the article

$$= 4900 \times \frac{110}{100} = ₹\,5390$$

$\therefore$ Marked price $= \frac{100}{87.5} \times 5390$

$= ₹\,6160$ [$\because$ Discount being 12.5%]

19. (a) According to question,

There is no loss or gain in the whole transaction means

16% profit on watch A CP_1

12% loss on watch B $CP_2 = 0$

16% Watch A = 12% Watch B

$$\frac{\text{Watch A } (CP_1)}{\text{Watch B } (CP_2)} = \frac{12\%}{16\%} = \frac{3}{4}$$

$CP_1 + CP_2 = 3 + 4 = 7$ units

7 units $\rightarrow$ 840 (Given)

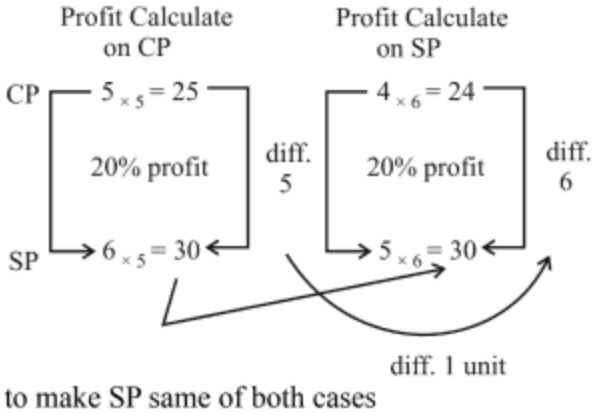
1 unit $\rightarrow$ 120

$\therefore$ 3 units $\rightarrow 120 \times 3 = 360$

CP of watch to sold at 16% profit

$= ₹\,360$

20. (c) According to question,



to make SP same of both cases

1 unit → ₹ 85

30 units → 30 × 85 = ₹ 2550

21. (a) According to question,

Given,

Loss : CP – 9400 = x ...(i)

Profit : 10600 – CP = 2x ...(ii)

Put the value of eq. (i) in eq. (ii)

∴ 10600 – CP = 2 (CP – 9400)

10600 – CP = 2CP – 18800

3CP = 29400

$CP = \frac{29400}{3} = 9800$

∴ CP = ₹ 9800

22. (b) Let the person buy 10 articles.

Total CP = ₹ (1 + 5/4) = ₹ 9/4

SP of 10 articles = ₹ 2/9 × 10 = ₹ 20/9

So, Loss = (9/4 – 20/9) = 1/36

Now, if loss is ₹ 1/36, Number of article = 10

So, If loss is ₹ 3, Number of articles

= 36 × 10 × 3 = 1080

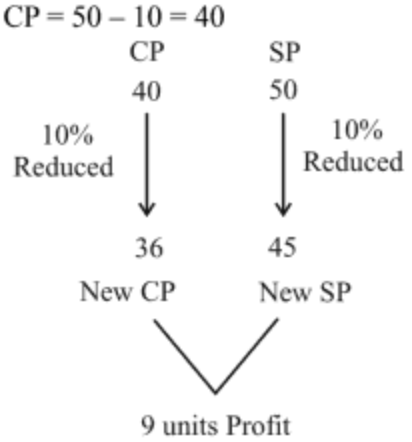
23. (b) Given :

20% profit on SP means = $\frac{1}{5}$

20% profit $\Rightarrow \frac{10 \rightarrow \text{Profit}}{50 \rightarrow \text{SP}}$

∴ CP = SP – Profit

CP = 50 – 10 = 40



∴ $\text{Profit\%} = \frac{\text{Profit}}{\text{CP}} \times 100 = \frac{9}{36} \times 100 = 25\%$

24. (b) Let the number of bad apples = x

C.P. of (240 – x) apples = ₹ 600

S.P. of (240 – x) apples = ₹ 3.5 × (240 – x)

According to the question,

⇒ 3.5 × (240 – x) – 600 = 198

∴ x = 12

⇒ $x\% = \frac{12}{240} \times 100 = 5\%$

25. (d) Total Discount by A

$= 20000 \times \frac{8}{100} + 16000 \times \frac{5}{100}$

= 1600 + 800 = ₹ 2400

Selling Price of A = 36,000 – 2,400 = ₹ 33,600

Selling Price of $B = 36{,}000 \times \frac{(100-7)}{100}$

$= 36{,}000 \times \frac{93}{100} = ₹\ 33{,}480$

26. (d) Let CP of each book = (x – 5), (x – 4) ..... , x (SP of sixth book), (x + 1) (x + 2) .... (x + 5)

$\text{Average} = \frac{\text{CP of } 1^{st} \text{ book} + \text{CP of } 11^{th} \text{ book}}{2}$

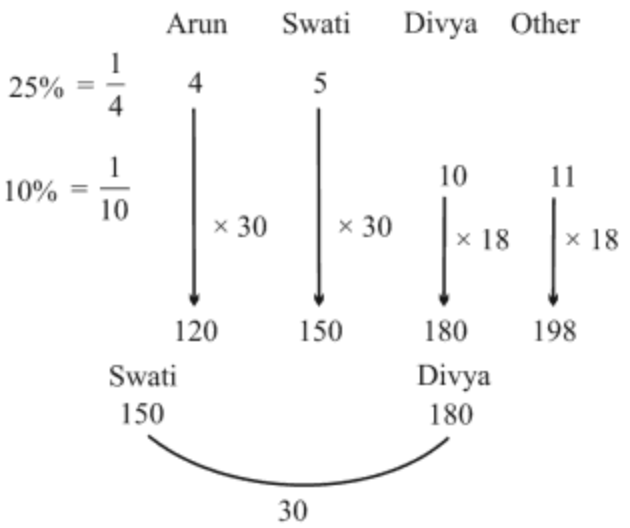
$= \frac{x+5+x-5}{2} = x$

∴ Total C.P. of 11 books = 11x

Total S.P. of 11 books = 11x

∴ Both are equal so neither profit nor loss

27. (b)



Profit % = $\frac{30}{150} \times 100 = 20\%$

28. (c) Let original C.P. = 100 units

CP of Balaji = $100 \times \frac{150}{100} \times \frac{80}{100}$ = 120 units

S.P. of Balaji = $\frac{130}{100} \times 100$ = 130 units

Profit of Balaji = 130 – 120 = 10 units

Profit percent = $\frac{10}{120} \times 100$ = 8.33%

Note : There is no use of ₹ 20 given in the question

29. (a) Let marked price = $100x$

then by statement

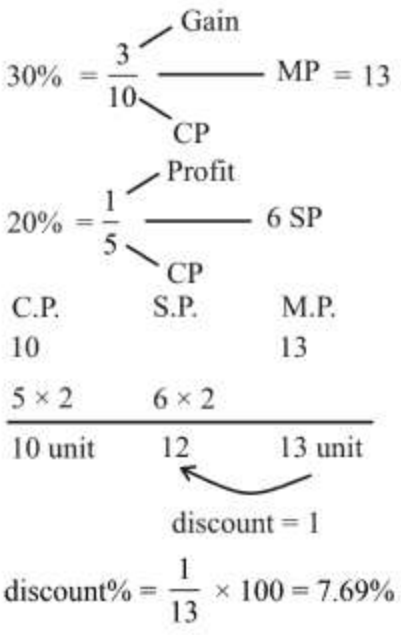
$95x + 92x \rightarrow$ selling price of both

$187x$ ——— 925

x ——— $\frac{925}{187}$ = 4.94

$\therefore$ Marked price = 4.94 × 100 = ₹ 494

30. (a)



discount% = $\frac{1}{13} \times 100 = 7.69\%$