

## Chapter 4

# Profit and Loss

PROFIT AND LOSS  
Discount: Di  
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### Theory:

**Cost Price (CP):** The money paid by the shopkeeper to the manufacturer or whole-seller to buy goods is called the cost price (cp) of the goods purchased by the shopkeeper.

**Selling Price (SP):** The price at which the shopkeeper sells the goods is called selling price (s.p.) of the goods sold by the shopkeeper to the customer.

**Profit:** If the selling price of an article is more than its cost price, then the dealer (or shopkeeper) makes profit (or gain)

$$\text{i.e., Profit} = SP - CP; SP > CP$$

**Loss:** If the selling price of an article is less than its cost price, the dealer suffers a loss

$$\text{i.e., Loss} = CP - SP; CP > SP$$

### Some Important Formulae:

$$(i) \text{ Profit} = SP - CP$$

$$(ii) \text{ Loss} = CP - SP$$

$$(iii) \text{ Profit percentage} = \left( \frac{\text{Profit}}{CP} \times 100 \right) \%$$

$$(iv) \text{ Loss percentage} = \left( \frac{\text{Loss}}{CP} \times 100 \right) \%$$

$$(v) S.P = \left( \frac{(100 + \text{Profit}\%)}{100} \times CP \right) = \left( \frac{(100 - \text{Loss}\%)}{100} \times CP \right)$$

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

$$(vii) SP = (100 + x)\% \text{ of } CP; \text{ when Profit} = x\% \text{ of } CP$$

$$(viii) SP = (100 - x)\% \text{ of } CP; \text{ when Loss} = x\% \text{ of } CP$$

**Example 1:** A man purchases an item for Rs. 120 and he sells it at a 20 percent profit, find his selling price

$$\text{Sol. } SP = \left( \frac{100 + \text{Profit}\%}{100} \right) \times CP = \frac{100 + 20}{100} \times 120 = \frac{120}{100} \times 120 = \text{Rs. 144}$$

**Note:** Profit/Loss percentage is always calculated on C.P. unless otherwise stated.

**Example 2:** Find the cost price of an article which is sold for Rs. 200 at a loss of 20%

$$\text{Sol. } CP = \frac{100}{100 - \text{Loss}\%} \times SP = \frac{100}{100 - 20} \times 200 = \text{Rs. 250}$$

### Concept 1:

#### MARK UP AND DISCOUNT

**Marked Price:** To avoid loss due to bargaining by the customer and to get profit over the cost price, the trader increases the cost price. This increase is known as markup and the increased price (i.e., CP + markup) is called the marked price or printed price or list price of the goods.

$$\text{Marked Price} = CP + \text{markup}$$

$$\text{Marked Price} = CP + \frac{(\% \text{ marked}) \times CP}{100}$$

Generally goods are sold at marked price, if there is no further discount, then in this case selling price equals marked price.

**Discount:** Discount means reduction of marked price to sell at a lower rate or literally discount means concession.

Basically, it is calculated on the basis of marked price.

$$\text{Selling price} = \text{Marked price} - \text{Discount}$$

$$\text{Selling price} = \text{MP} - \frac{(\% \text{ Discount}) \times \text{MP}}{100}$$

**Example:** If the cost price of an article is Rs. 300 and the percent markup is 30%. What is the marked price?

$$\text{Sol. } \text{MP} = \text{CP} + (\% \text{ markup on CP}) = 300 + \frac{30}{100} \times 300 = \text{Rs. 390}$$

**Concept 2:**

**Dishonest Dealer Case:** If a trader professes to sell his goods at cost price, but uses false weights, then

$$\% \text{ gain} = \frac{\text{Error}}{\text{True value} - \text{Error}} \times 100 \Rightarrow \% \text{ gain} = \frac{\text{True weight} - \text{False weight}}{\text{False weight}} \times 100$$

**Example:** A shopkeeper sold an article at cost price but used the weight of 960 gm in place of 1 kg weight. Find his profit%?

$$\text{Sol. } \text{Profit \%} = \frac{\text{True weight} - \text{False weight}}{\text{False weight}} \times 100 = \frac{1000 - 960}{960} \times 100 = \frac{40}{960} \times 100 = \frac{25}{6} = 4\frac{1}{6}\%$$

**Concept 3:**

Where two articles are sold at same price but one of them at a profit and another at a loss and the percentage profit is the same as the percentage loss, In this case there is always a loss.

$$\text{Loss \%} = \left( \frac{\text{Common Profit or Loss \%}}{10} \right)^2 = \left( \frac{\% \text{ value}}{10} \right)^2$$

**Example:** Each of two car is sold for Rs. 1000. The first one is sold at 25% profit and the other one at 25% loss. What is the percentage loss or gain in the deal?

$$\text{Sol. } \text{Total s.p} = 1000 \times 2 = \text{Rs. 2000}$$

$$\begin{aligned} \text{CP of 1st car} &= \frac{100 \times 1000}{125} & [\because \text{Profit} = 25\%] \\ &= \text{Rs. 800} \\ \text{CP of 2nd car} &= \frac{100 \times 1000}{75} & [\because \text{Loss} = 25\%] \end{aligned}$$

$$= \text{Rs. } 1333\frac{1}{3}$$

$$\text{Total CP} = \text{Rs. } 2133\frac{1}{3} \Rightarrow \text{Loss \%} = \frac{\text{CP} - \text{SP}}{\text{CP}} \times 100 = \frac{2133\frac{1}{3} - 2000}{2133\frac{1}{3}} \times 100 = 6.25\%$$

or, Using Shortcut Formula

$$\text{Loss \%} = \left( \frac{\% \text{ value}}{10} \right)^2 = \left( \frac{25}{10} \right)^2 = 6.25\%$$

**Concept 4:**

When two successive discounts on an article are  $x\%$  and  $y\%$  resp. then net discount:  $\left( x+y-\frac{xy}{100} \right)\%$

**Example:** A shopkeeper given two successive discount of 50% and 50% find the real (equivalent) discount?

**Sol.** Let MP = Rs. 100

$$\text{Cost after 1st discount of } 50\% = 100 - 50\% \text{ of } 100 = \text{Rs. 50}$$

**PROFIT AND LOSS**

Cost after 2<sup>nd</sup> discount of 50% = 50 - 50% of 50 = Rs. 25  
 Price after both discount = Rs. 25

$$\% \text{ discount} = \frac{100 - 25}{100} \times 100 = 75\%$$

or, Using Shortcut Formula

$$\% \text{ discount} = x + y - \frac{xy}{100}$$

[where x = 50%, y = 50%]

$$= 50 + 50 - \frac{50 \times 50}{100} = 100 - 25 = 75\%$$

### Types of Questions

1. There is a profit of 20% on the cost price of an article. Find the profit percent when calculated on selling price?

**Sol.** Let the cost price of an article be Rs. 100 then, Profit = 20% of 100 = Rs. 20  
 Selling price = Cost price + profit  
 $= 100 + 20 = \text{Rs. } 120$

Profit % when calculated on SP

$$= \frac{20}{120} \times 100 = \frac{100}{6} = 16\frac{2}{3}\%$$

2. By selling a bicycle for Rs. 2850, a shopkeeper gains 14%. If the profit is reduced to 8%, find the selling price of bicycle?

$$\begin{aligned} \text{Sol. } CP &= \frac{SP \times 100}{100 + \text{Profit \%}} = \frac{2850 \times 100}{100 + 14} \\ &= \frac{2850 \times 100}{114} = \text{Rs. } 2500 \end{aligned}$$

SP of article for 8% Profit

$$\begin{aligned} SP &= \frac{CP \times (100 + \text{Profit \%})}{100} = \frac{2500 \times 108}{100} \\ &= 25 \times 108 = \text{Rs. } 2700 \end{aligned}$$

3. The selling price of 12 articles is equal to the cost price of 15 articles. Find the gain percent?

**Sol.** Let the CP of 1 article = Rs. x

Cost Price of 15 article = Rs. 15x  
 Selling Price of 12 article = Rs. 15x

$$\text{SP of 1 article} = \text{Rs. } \frac{15}{12}x$$

$$\text{Gain} = \frac{15x}{12} - x = \frac{3x}{12} = \frac{x}{4}$$

$$\text{Gain \%} = \frac{\text{Gain} \times 100}{CP} = \frac{\frac{x}{4} \times 100}{x} = 25\%$$

4. A fruit seller buys some fruits at the rate of 11 for Rs. 10 and the same number at the rate of 9 for Rs. 10. If all the fruits are sold for Rs. 1 each. Find the gain or loss percent?

**Sol.** In these types of question, we have to take the LCM of number of individual things.

Number of fruits of each type he bought  
 = LCM of 11 and 9 = 99  
 Total number of fruits =  $99 \times 2 = 198$

$$\begin{aligned} \text{CP of 198 fruits} &= \frac{10}{11} \times 99 + \frac{10}{9} \times 99 \\ &= 90 + 110 = \text{Rs. } 200 \end{aligned}$$

$$SP = 198 \times 1 = \text{Rs. } 198$$

$$\begin{aligned} \text{Loss \%} &= \frac{CP - SP}{CP} \times 100 = \frac{200 - 198}{200} \times 100 \\ &= \frac{2}{200} \times 100 = 1\% \end{aligned}$$

5. A book vendor sold a book at a loss of 10%. Had he sold it for Rs. 108 more, he would have earned a profit of 10%. Find the cost of the book.

**Sol.** Let the CP article = x

$$SP = \frac{x(100 - 10)}{100} = \frac{90x}{100} = \frac{9x}{10} \quad [\text{Loss of } 10\%]$$

$$\frac{9x}{10} + 108 = \frac{110x}{100} \quad [\text{If vendor sold for Rs. 108 more}]$$

$$\frac{110x}{100} - \frac{9x}{10} = 108 \Rightarrow \frac{11x}{10} - \frac{9x}{10} = 108$$

$$2x = 1080 \Rightarrow x = \text{Rs. } 540$$

6. A person bought some article 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 Rs. 2. In this business he suffered a loss of Rs. 3. Find the total no. of articles bought by him?

**Sol.** Let the person buys 10 articles

$$\text{Total CP} = \text{Rs.} \left( 5 \times \frac{1}{5} + \frac{5 \times 1}{4} \right) = \text{Rs.} \left( 1 + \frac{5}{4} \right) = \text{Rs. } \frac{9}{4}$$

$$\text{SP of 10 articles} = \frac{2}{9} \times 10 = \text{Rs. } \frac{20}{9}$$

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$$\text{Loss} = \text{Rs.} \left( \frac{9}{4} - \frac{20}{9} \right) = \left( \frac{81-80}{36} \right) = \text{Rs.} \frac{1}{36}$$

If loss is Rs.  $\frac{1}{36}$ , then number of articles = 10

If loss is Rs. 3, number of articles =  $36 \times 10 \times 3 = 1080$   
7. A man buys a field of agricultural land for Rs. 360000.

He sells  $\frac{1}{3}$  rd at a loss of 20% and  $\frac{2}{5}$  th at a gain of 25%. At what price must he sell the remaining field so as to make an overall profit of 10%?

$$\text{Sol. SP of total agricultural field} = \text{Rs.} \left( 360000 \times \frac{110}{100} \right)$$

= Rs. 396000 [overall profit of 10%]

SP of  $\frac{1}{3}$  rd of the field

$$= \frac{1}{3} \times 360000 \times \frac{80}{100} [\text{Loss of } 20\%] \Rightarrow \text{Rs.} 96000$$

SP of  $\frac{2}{5}$  th of the field

$$= \frac{2}{5} \times 360000 \times \frac{125}{100} [\text{Gain of } 25\%] \Rightarrow \text{Rs.} 180000$$

SP of the remaining field

$$= \text{Rs.} (396000 - 96000 - 180000) = \text{Rs.} 120000$$

8. One trader calculates the percentage of profit on the buying price and another calculates on the selling price. When their selling price are the same, then difference of their actual profit is Rs. 85 and both claim to have made 20% profit. What is the selling price of each?

Sol. For first trader,

Let the CP of the article of Rs. 100, SP = Rs. 120

For second trader, SP of the article = Rs. 120

Gain = 20% [For both the traders]

Let the CP be x

$$\frac{120-x}{120} \times 100 = 20 \Rightarrow 120-x = \frac{20}{5} \times 6$$

$$\Rightarrow 120-x = 24 \Rightarrow x = 120-24 = \text{Rs.} 96$$

Gain = Rs. 24 [SP - CP]

Difference of gain =  $24 - 20 = \text{Rs.} 4$

If the difference of gain be Rs. 4, then

SP = Rs. 120

When the difference be Rs. 85, then

$$\text{SP} = \frac{120}{4} \times 85 = \text{Rs.} 2550$$

9. If the sales tax be reduced from  $3\frac{1}{2}\%$  to  $3\frac{1}{3}\%$ . What difference does it make to person who purchases an article whose marked price is Rs. 8400?

**QUANTITATIVE APTITUDE**

Sol. Initial sales tax =  $3\frac{1}{2}\%$ , Final sales tax =  $3\frac{1}{3}\%$   
Difference in percentage of sales tax

$$= \left( 3\frac{1}{2} - 3\frac{1}{3} \right)\% = \frac{1}{6}\%$$

$$\text{Req. diff.} = \frac{1}{6}\% \times 8400 = \frac{1}{6} \times \frac{1}{100} \times 8400 = \text{Rs.} 14$$

10. A man sells two cycle for Rs. 1710. The cost price of the first is equal to the selling price of the second. If the first is sold at 10% loss and the second at 25% gain, what is his total gain or loss?

Sol.

	1 <sup>st</sup> Cycle	2 <sup>nd</sup> Cycle	Total
CP	100	$100 \left( \frac{100}{125} \right) = 80$	180
SP	$100 \left( \frac{90}{100} \right) = 90$	100	190

$$\text{Total CP} = (\text{CP of 1<sup>st</sup> Cycle}) + (\text{CP of 2<sup>nd</sup> Cycle}) \\ = 100 + 80 = \text{Rs.} 180$$

$$\text{Total SP} = (\text{SP of 1<sup>st</sup> Cycle}) + (\text{SP of 2<sup>nd</sup> Cycle}) \\ = 90 + 100 = \text{Rs.} 190$$

$$\text{CP : SP} = 180 : 190 = 18 : 19$$

$$\text{Profit} = \frac{19-18}{19} \times 1710 = \text{Rs.} 90$$

11. Ashish bought an article with 20% discount on the labelled price. He sold the article with 30% profit on the labelled price. What was his percent profit on the price he bought?

Sol. Let the labelled price of the article be Rs. x

$$\text{Cost Price} = x \left( \frac{100-20}{100} \right) = \text{Rs.} \frac{4x}{5}$$

$$\text{Selling Price} = x \left( \frac{100+30}{100} \right) = \text{Rs.} \frac{13}{10}x$$

$$\text{Profit} = \frac{13}{10}x - \frac{4}{5}x = \frac{13x-8x}{10} = \frac{x}{2} [\text{SP} - \text{CP}]$$

$$\% \text{ Profit} = \frac{\frac{x}{2}}{\frac{4x}{5}} \times 100 = \frac{5}{8} \times 100 = \frac{125}{2} = 62.5\%$$

12. A shopkeeper sold an article for Rs. 400 after giving 20% discount on the labelled price and made 20% profit on cost price. What was the percentage profit, had he not given the discount?

$$\text{Sol. Labelled Price} = \frac{400 \times 100}{80} [\text{Before discount of } 20\%] \\ = \text{Rs.} 500$$

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Cost Price of article

$$= \frac{400 \times 100}{120} = \text{Rs. } \frac{1000}{3} \quad [\text{20% profit on CP}]$$

$$\text{Profit \%} = \frac{\frac{500 - 1000}{3}}{\frac{1000}{3}} \times 100 = \frac{\frac{1500 - 1000}{3}}{\frac{1000}{3}} \times 100 \\ = \frac{500}{1000} \times 100 = 50\%$$

13. A reduction of 20% in the price of mangoes enables a person to purchase 12 more for Rs. 15. Find the price of 16 mangoes before reduction?

**Sol.** Let the price of 1 mango be  $x$  paise  
Number of mangoes for

$$\text{Rs. } 15 = \frac{1500}{x} \quad [\text{Rs. } 1 = 100 \text{ paise}]$$

New price of one mango = (80% of  $x$ ) paise

$$= \frac{80}{100} \times x = \frac{4}{5} x \text{ paise}$$

$$\text{Number of mangoes for Rs. } 15 = \left( \frac{1500 \times 5}{4x} \right)$$

$$\frac{7500}{4x} - \frac{1500}{x} = 12 \quad [\text{Diff. as mentioned in the Ques.}]$$

$$x = 31.25$$

Cost of 16 mangoes before reduction

$$= \frac{31.25 \times 16}{100} = \text{Rs. } 5$$

14. A garment company declared 15% discount for wholesale buyers. Mr. Hemant bought garments from the company for Rs. 8500 after getting discount. The fixed up selling price of garments in such a way that he earned a profit of 10% on original company price. What is the total selling price?

**Sol.** Original Company price =  $\frac{8500 \times 100}{100 - 15} = \text{Rs. } 10000$

Let the total selling price be Rs.  $x$ .

Now, according to the question,

$$\frac{x - 10000}{10000} \times 100 = 10 \quad [\text{Profit of } 10\%]$$

$$100x - 1000000 = 100000 \Rightarrow x = \text{Rs. } 11000$$

Total selling price = Rs. 11000

15. A publisher published 5000 books in 5 lakh rupees.

If he gives 500 books in free,  $\frac{2}{3}$  rd of the rest he sell on

20% discount and remaining  $\frac{1}{3}$  rd on M.P. He also gives 20% commission of the total selling. Find the profit% of the publisher if market price of each book is Rs. 200?

**Sol.** Total number of books = 5000  
he gives free book = 500

$$\text{SP of I}^{\text{st}} \text{ part} = 3000 \times 200 \times \frac{4}{5} = \text{Rs. } 480000$$

[20% Discount on  $\frac{2}{3}$  rd of rest]

$$\text{SP or II}^{\text{nd}} \text{ part} = 1500 \times 200 = \text{Rs. } 300000$$

[Price is MP of  $\frac{1}{3}$  rd of the rest]

$$\text{Total SP} = 480000 + 300000 = \text{Rs. } 780000$$

$$\text{Total SP after Commission} = \frac{80}{100} \times 780000$$

[20% Commission]  
= Rs. 624000

Total CP = Rs. 5,00,000, Total SP = Rs. 6,24,000

Net profit = 6,24,000 - 5,00,000 = 1,24,000

$$\text{Profit \%} = \frac{124000}{500000} \times 100 = 24.8\%$$

## Foundation

### Questions

1. A man buys an article for Rs. 27.50 and sells it for Rs. 28.60. Find the gain percent?  
 (a) 4%      (b) 3%      (c) 5%  
 (d) 10%      (e) None of these
2. If a radio is purchased for Rs. 490 and sold for Rs. 465.50. Find the loss%?  
 (a) 6%      (b) 5%      (c) 4%  
 (d) 3%      (e) None of these
3. Find SP when CP = Rs. 56.25 and Gain = 20%?

- (a) Rs. 72      (b) Rs. 67.5      (c) Rs. 50  
 (d) Rs. 75      (e) None of these

4. Find SP when CP = Rs. 80.40, loss = 5%?

- (a) Rs. 81      (b) Rs. 84.72      (c) Rs. 76.38  
 (d) Rs. 82.9      (e) None of these

5. Find CP when SP = Rs. 40.60, gain = 16%?

- (a) Rs. 35      (b) Rs. 50      (c) Rs. 75  
 (d) Rs. 89      (e) None of these

6. Find CP when SP = Rs. 51.70, loss = 12%?

- (a) Rs. 58.75      (b) Rs. 62.25      (c) Rs. 65  
 (d) Rs. 69.27      (e) None of these

**PROFIT AND LOSS**

7. A person incurs 5% loss by selling a watch for Rs. 1140. At what price should the watch be sold to earn 5% profit?  
 SP =  $\frac{100}{100-5} \times \frac{100+5}{100} = 1140$   
 (a) Rs. 1380 (b) Rs. 1160 (c) Rs. 1260  
 (d) Rs. 1400 (e) None of these
8. If the cost price is 96% of the selling price, then what is the profit percent?  
 (a) 5.72% (b) 3.72% (c) 8.92%  
 (d) 2.8% (e) None of these
9. A discount dealer professes to sell his goods at cost price but uses a weight of 960 gms instead of a Kg weight. Find his gain %?  
 (a)  $\frac{27}{4}\%$  (b)  $\frac{8}{3}\%$  (c)  $\frac{25}{6}\%$   
 (d)  $\frac{21}{4}\%$  (e) None of these
10. A man sold two cows at Rs. 1995 each. On one he lost 10% and on the other he gained 10%. What is his gain or loss percent?  
 (a) 4% (b) 2% (c) 0.5%  
 (d) 1% (e) None of these
11. Two discounts of 40% and 20% equal to a single discount of?  $\frac{40}{100} \times \frac{20}{100} = \frac{8}{100}$   
 (a) 48% (b) 53% (c) 52%  
 (d) 60% (e) None of these
12. Amit buys 5 watches for Rs. 9450 and later sells them for Rs. 9700. How much profit does Amit make per watch?  
 (a) Rs. 75 (b) Rs. 80 (c) Rs. 60  
 (d) Rs. 95 (e) None of these
13. The price of 12 chair and 8 table is Rs. 676. What is the price of 21 chair and 14 table?  
 (a) Rs. 1183 (b) Rs. 4732 (c) Rs. 1180  
 (d) Cannot be determined (e) None of these
14. Aditya sold TV to Sanjay at 12% more than the CP. If Sanjay paid Rs. 17696 for that TV then what was the original price of the TV?  
 (a) Rs. 15,500 (b) Rs. 15,820 (c) Rs. 15,520  
 (d) Rs. 15,800 (e) None of these
15. Amit purchased 13 chair of Rs. 115 each and sold all at Rs. 1220. Then find the profit or Loss on the transaction  
 (a) Rs. 280 Loss (b) Rs. 275 Loss (c) Rs. 325 Profit  
 (d) Rs. 350 Profit (e) None of these
16. Aditya purchase a book with a 20% discount on the marked price. How much did he pay if the book marked was Rs. 500?  
 (a) Rs. 400 (b) Rs. 300 (c) Rs. 200  
 (d) Rs. 500 (e) None of these
17. By selling a book for Rs. 360, 20% profit was earned. What is the CP of the book?  
 (a) Rs. 300 (b) Rs. 200 (c) Rs. 250  
 (d) Cannot be determined (e) None of these

**QUANTITATIVE APTITUDE**

18. Profit earned by selling an article of Rs. 1630 is same as the loss incurred by selling the article for Rs. 1320. What is the CP?  
 (a) Rs. 1475 (b) Rs. 1300 (c) Rs. 1350  
 (d) Rs. 1275 (e) None of these
19. If the CP of 50 items is equal SP of 40 items then what is the profit or loss %?  
 (a) 20% (b) 15% (c) 25%  
 (d) 35% (e) None of these
20. If a banana cost is Rs. 1.25 and apple cost is Rs. 1.75 then what will be the cost of 2 Dozen of Banana and 3 Dozen of apple?  
 (a) Rs. 93 (b) Rs. 83 (c) Rs. 85  
 (d) Rs. 70 (e) Rs. 40
21. Nutan bought a watch with 24% discount. If she pays Rs. 779 for that watch then what is the marked price of watch?  
 (a) Rs. 950 (b) Rs. 975 (c) Rs. 1000  
 (d) Rs. 1025 (e) None of these
22. Nutan pays Rs. 2140 for 3 calculator and 4 Pen while he pay Rs. 1355 for an additional calculator and 5 Pen. Then what he paid for Calculator only?  
 (a) Rs. 175 (b) Rs. 480 (c) Rs. 655  
 (d) Can't be determined (e) None of these
23. A vendor bought toffees at 6 for a rupee. How many for a rupee must he sell to gain 20%?  
 (a) 3 (b) 4 (c) 5  $\frac{20}{100} = \frac{1}{x} - \frac{1}{6}$   
 (d) 6 (e) None of these
24. A man sold his two horses for Rs. 770 each, on one he gained 10% & on the other he lost 10%. The average gain or loss percentage is  
 (a) 100% (b) 0.96% (c) 4%  $\frac{a^2}{100} - \frac{1}{2} \times 5\%$   
 (d) 1% (e) None of these
25. If the selling price of an article is  $\frac{4}{3}$  rd of its cost price the profit in the transaction is  
 (a)  $16\frac{2}{3}\%$  (b)  $20\frac{1}{2}\%$  (c)  $25\frac{1}{2}\%$   
 (d)  $33\frac{1}{3}\%$  (e) None of these
26. A sells his house worth Rs. 10 lakh to B at a loss of 10%. Later B sells it back to A at 10% profit. The result of the two transactions is  
 (a) A neither loses nor gains  
 (b) A loses Rs. 90,000  
 (c) A loses Rs. 2,00,000  
 (d) B gains Rs. 1,10,000  
 (e) None of these
27. A fair price shopkeeper takes 10% profit on his good. He lost 20% goods during theft his loss % is  
 (a) 8% (b) 10% (c) 11%  
 (d) 12% (e) None of these

## PROFIT AND LOSS

28. Aditya bought 200 dozen orange at Rs. 10 per dozen and he spent Rs. 500 on transportation. He sold each orange at Rs. 1 each. What was his profit or loss%?  
 (a) 5% (b) 6% (c) 4%  
 (d) Can't be determine (e) None of these
29. If 11 Mango are bought for Rs. 10 and sold at 10 for Rs. 11. What was Gain or Loss%?  
 (a) 24% (b) 21% (c) 26%  
 (d) 25% (e) None of these
30. The cost price of 20 articles is the same as the selling price of  $x$  articles. If the profit is 25%, then the value of  $x$  is:  
 (a) Rs. 15 (b) Rs. 16 (c) Rs. 18  
 (d) Rs. 25 (e) None of these
31. If selling price is doubled, the profit triples. Find the profit percent:  
 (a)  $66\frac{2}{3}\%$  (b) 100% (c)  $105\frac{1}{3}\%$   
 (d) 120% (e) None of these
32. Some articles were bought at 6 articles for Rs. 5 and sold at 5 articles for Rs. 6. Gain percent is:  $\frac{6^2 - 5^2}{5^2} \times 100$   
 (a) 30% (b)  $33\frac{1}{3}\%$  (c) 35%  
 (d) 44% (e) None of these
33. The cost price of 12 tables is equal to the selling price of 16 tables. The loss percent is  
 (a) 15% (b) 20% (c) 25%  
 (d) 30% (e) None of these
34. Two continuous discounts of 4% on any thing should be equal to  
 (a) 8% (b) 7.92% (c) 7.84%  
 (d) 8.08% (e) None of these
35. A sells a bicycle to B at a profit of 20% and B sells it to C at a profit of 25%. If C pays Rs. 1500, what did A pay for it?  
 (a) Rs. 825 (b) Rs. 1000 (c) Rs. 1100  
 (d) Rs. 1125 (e) None of these
36. Ram purchases a chair at Rs. 70 and spent Rs. 17 on its repair and 50 paise on cartage. If he sold the chair at Rs. 100 then his approximate margin of profit will be?  
 (a) 13.30% (b) 11.25% (c) 12.5%  
 (d) 14.3% (e) None of these
37. A shopkeeper marks his goods 20% above CP but allows 30% discount for cash. His net loss is?  
 (a) 8% (b) 20% (c) 10%  
 (d) 16% (e) None of these
38. A single discount, equivalent to a successive discount of 40% and 30% is?  
 (a) 55% (b) 56% (c) 57%  
 (d) 58% (e) None of these
39. If the CP of 13 bats is Rs. 390. What is the price when it is sold at 10% loss?  
 (a) Rs. 200 (b) Rs. 300 (c) Rs. 350  
 (d) Rs. 400 (e) None of these
40. If an item is sold for Rs. 924 then there is a profit of 10% then what is the cost price?  
 (a) Rs. 840 (b) Rs. 860 (c) Rs. 880  
 (d) Rs. 900 (e) None of these

## Moderate

1. The cost of an article including the sales tax is Rs. 616. The rate of sales tax is 10%, if the shopkeeper has made a profit of 12%, then the cost price of the article is?  
 (a) Rs. 350 (b) Rs. 500 (c) Rs. 650  
 (d) Rs. 800 (e) None of these
2. Two third of consignment was sold at a profit of 5% and the remainder at a loss of 2%. If the total profit was Rs. 400, the value of the consignment was?  
 (a) Rs. 12000 (b) Rs. 14000 (c) Rs. 15000  
 (d) Cannot be determined (e) None of these
3. A tradesman gives 4% discount on the marked price and gives one article free for buying every 15 articles and thus gains 35%. The marked price is approx. how much percent above the CP?  
 (a) 20% (b) 30% (c) 40%  
 (d) 50% (e) 70%
4. When a producer allows 36% concession on the retail price of his product, he earns a profit of 8.8%. What would be his profit percent if the commission is reduced by 20%?
5. A person earns 15% on investment but loses 10% on another investment. If the ratio of the two investments be 3 : 5, what is the gain or loss on the two investments taken together?  
 (a) 0.625% (b) 0.8% (c) 0.9%  
 (d) 1.2% (e) 1.45%
6. The profit earned by selling an article for Rs. 900 is double the loss incurred when the same article is sold for Rs. 450. At what price should the article be sold to make 25% profit?  
 (a) Rs. 400 (b) Rs. 500 (c) Rs. 700  
 (d) Rs. 750 (e) Rs. 900
7. A shopkeeper sold some article at the rate of Rs. 35 per article and earned profit of 40%. At what price each article should have been sold so that profit of 60% was earned.  
 (a) Rs. 45 (b) Rs. 42 (c) Rs. 39  
 (d) Rs. 40 (e) None of these

**PROFIT AND LOSS**

8. Due to a 20% rise in price of sugar, a bachelor is able to buy 1.5 kg less for Rs. 135. What is the increased price of sugar per kg?  
 (a) Rs. 15      (b) Rs. 21      (c) Rs. 18  
 (d) Rs. 24      (e) None of these
9. A trader mixes 26 kg of rice at Rs. 20 per kg with 30 kg of rice of other variety at Rs. 36 per kg and sells the mixture at Rs. 30 per kg. His profit percent is:  
 (a) No profit, no loss      (b) 5%  
 (c) 8%      (d) 10%      (e) None of these
10. A TV set is being sold for Rs.  $x$  in Chandigarh. A dealer went to Delhi and bought the TV at 20% discount (from the price of Chandigarh). He spent Rs. 600 on transport. Thus he sold the set in Chandigarh for Rs.  $x$  making  $14\frac{2}{7}\%$  profit. What was  $x$ ?  
 (a) Rs. 9600      (b) Rs. 8800      (c) Rs. 8000  
 (d) Rs. 7200      (e) None of these
11. Sanjay purchased a chair marked at Rs. 800 at 2 successive discount of 10% and 15% respectively. He spent Rs. 28 on transportation and sold the chair for Rs. 800. How much is his gain percentage?  
 (a) 14%      (b) 30%      (c) 25%  
 (d) 40%      (e) None of these
12. When a book is sold at its Marked Price it gives a profit of 40%. What will happen if it is sold at half the marked Price?  
 (a) 30% profit      (b) 25% loss      (c) 30% loss  
 (d) 40% profit      (e) None of these
13. Aditya purchased 14 shirt & 25 pants at Rs. 45 and Rs. 55 respectively what should be the approximate overall average selling price of shirt and pant so that 40% profit is earned?  
 (a) Rs. 72.5      (b) Rs. 71      (c) Rs. 72  
 (d) Rs. 70      (e) None of these
14. A person sells 36 apple per rupee and suffers a loss of 4%. Find how many apple per rupees to be sold to have a gain of 8%.  
 (a) 32      (b) 16      (c) 4      (d) 15      (e) None of these
15. Ram sells an article to Girish at a gain 20%, Girish sells it to Sanjay at a gain of 10% and Sanjay sells it to Aditya at a gain of  $12\frac{1}{2}\%$ . If aditya pay Rs. 59.40.
- What did it cost Ram?  
 (a) Rs. 40      (b) Rs. 22      (c) Rs. 24  
 (d) Rs. 18      (e) None of these
16. A fruit seller sells  $\frac{3}{5}$ th part of fruit at a profit of 10% and remaining at a loss of 5%. If the total profit is Rs. 1500 then what is the total cost price of fruit?  
 (a) Rs. 37500      (b) Rs. 37000      (c) Rs. 36500  
 (d) Rs. 36000      (e) None of these
17. A shopkeeper buys a toy at Rs. 100 and sells it at Rs. 125. Another shopkeeper buys the same toy at Rs. 125 but sells it at Rs. 100. What are the respective profit and loss percentages for the two shopkeepers.  
 (a) 20%, 20%      (b) 25%, 20%      (c) 25%, 25%  
 (d) 25%,  $16\frac{2}{3}\%$       (e) None of these
18. The marked price of a bed is Rs. 2400. The shopkeeper gives successive discounts of 10% and  $x\%$  to customer. If the customer pays Rs. 1836 for the bed then find the value of  $X$ ?  
 (a) 15%      (b) 18%      (c) 12%  
 (d) 10%      (e) None of these
19. Three successive discounts of 10%, 12% and 15% will amount to a single discount of?  
 (a) 36.28%      (b) 32.68%      (c) 34.68%  
 (d) 37%      (e) None of these
20. A loss of 19% gets converted into profit of 17% when the selling price is increased by Rs. 162. Find the cost price of the article.  
 (a) Rs. 300      (b) Rs. 350      (c) Rs. 400  
 (d) Rs. 450      (e) None of these
21. A shopkeeper sold an article offering discount of 5% and earn a profit of 23.5%. What would have been the percentage of profit earned if no discount has been offered?  
 (a) 23%      (b) 30%      (c) 33%  
 (d) Cannot be determined      (e) None of these
22. If Aditya sells an article to Nutan at 10% gain, while Nutan sells it to Manish at 20% gain at Rs. 1914 then what is the Cost Price?  
 (a) Rs. 1450      (b) Rs. 1340      (c) Rs. 1560  
 (d) Rs. 1780      (e) None of these
23. Rita buys an article for Rs. 9600. She sold it at 12% loss and get some money and from that money she again buys an article and this time she got 12% profit. What was profit or loss she got form this transaction?  
 (a) Rs. 130      (b) Rs. 138      (c) Rs. 138.24  
 (d) Rs. 138.42      (e) None of these
24. Nutan bought 30 dozens of oranges for her juice stall in the school fair. She paid Rs. 8 per dozen of oranges. She also had to pay Rs. 500 as the stall fee to the school authorities. She calculated that each glass of juice would need 3 oranges. How much should she charge per glass of juice so as to make 20% profit?  
 (a) Rs. 7.20      (b) Rs. 7.40      (c) Rs. 7.60  
 (d) Rs. 7.80      (e) None of these
25. Aditya bought a scooter for a certain sum of Money. He spend 15% of cost price on repair and sold it for a profit on Rs. 1104. What will he spend on repair if profit he got was 20%?  
 (a) Rs. 600      (b) Rs. 700      (c) Rs. 800  
 (d) Rs. 900      (e) None of these

**QUANTITATIVE APTITUDE**

## PROFIT AND LOSS

26. In a certain store, the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit?
- 30%
  - 70%
  - 100%
  - 250%
  - None of these
27. A shopkeeper sells one transistor for Rs. 840 at a gain of 20% and another for Rs. 960 at a loss of 4%. His total gain or loss percent is:
- $$\frac{100+23.4}{100-14} \times 100 = 100 + 17.4 = 117.4\%$$
- $5\frac{15}{17}\%$  loss
  - $5\frac{15}{17}\%$  gain
  - $6\frac{2}{3}\%$  gain
  - $6\frac{1}{2}\%$  Loss
  - None of these
28. A dealer buys a table listed at Rs. 600 and gets successive discount of 10% and 20%. What is his profit or loss percent if he sells at Rs. 540?
- 25%
  - 20%
  - 15%
  - $17\frac{1}{2}\%$
  - None of these
29. Sonal buys mangoes at the rate of 3 kgs for Rs. 21 and sells them at 5 kgs for Rs. 50. To earn a profit of Rs. 102, he must sell how many mangoes?
- 34 kgs
  - 52 kgs
  - 26 kgs
  - 32 kgs
  - None of these
30. An electric pump was sold at a profit of 15%. Had it been sold for Rs. 600, the profit would have been 20%. The former selling price is
- Rs. 500
  - Rs. 540
  - Rs. 575
  - Rs. 600
  - None of these
31. On a Rs. 10,000 payment order, a person has a choice between three successive discounts of 10%, 10% and 30% and three successive discounts of 40%, 5% and 5%. By choosing the better offer, he can save?
- Rs. 200
  - Rs. 225
  - Rs. 400
  - Rs. 433
  - None of these
32. A man sells each of his 2 articles for Rs. 99. On one he gains 10% and on the other he incurred a loss of 1% in the entire transaction. What is his total gain?
- 9%
  - $4\frac{4}{19}\%$
  - 4.5%
  - 5.5%
  - None of these
33. The market price of an article is Rs. 100. If the article is sold at a discount of 10%, then 35% profit is realized. How much loss or profit will be made if it is sold for Rs. 30 less than market price?
- 5% loss
  - 8% gain
  - 5% gain
  - 8% loss
  - None of these
34. A shopkeeper sold an article offering discount of 24% and earn a profit of 23.5%. What would have been the percentage of profit earned if no discount had been offered?
- 63%
  - 62.50%
  - 60%
  - Cannot be determined
  - None of these
35. On selling an article for Rs. 500 the loss incurred is 20%. To make a profit of 20% the article must be sold at?
- Rs. 700
  - Rs. 750
  - Rs. 800
  - Rs. 900
  - None of these
36. The CP of 19 article is equal to the selling price of 15 article. Gain % is?
- 26%
  - $26\frac{1}{3}\%$
  - 12%
  - $26\frac{2}{3}\%$
  - None of these
37. The cash difference between the selling price of an article at a profit of 4% and 6% is Rs. 3. The ratio of the 2 selling price is?
- 50 : 53
  - 51 : 52
  - 51 : 53
  - Cannot be determined
  - None of these
38. A shopkeeper has to sell 24 Kg of sugar. He sells a part of these at a gain of 20% and the rest at a loss of 5%. If on the whole he earns a profit of 10%, the amount of Sugar sold at a loss is?
- Rs. 7.5
  - Rs. 9.6
  - Rs. 10
  - Cannot be determined
  - None of these
39. If a shopkeeper sells 25 articles at Rs. 45 per article after giving 10% discount and earns 50% profit. If the discount is not given the profit gained is?
- 80%
  - 32%
  - 35%
  - Cannot be determined
  - None of these
40. The price of a TV is Rs. 10,000. If successive discount of 15%, 10% and 5% allowed. Then at what price does a customer buy?
- Rs. 7267.50
  - Rs. 7000
  - Rs. 7200
  - Cannot be determined
  - None of these

## Difficult

1. Sarita sells a Phone at a profit of 20%. If she had bought it at 20% less and sold it for Rs. 180 less, she would have gained 25%. Find the cost price of the Phone.
- Rs. 800
  - Rs. 850
  - Rs. 900
  - Rs. 1000
  - None of these
2. Ravi purchases 90 pens and sells 40 pens at a gain of 10% and 50 pens at a gain of 20%. Had he sold all of them at a uniform profit of 15% he would have got Rs. 40 less. Find the cost price of each pen.
- Rs. 80
  - Rs. 75
  - Rs. 90
  - Rs. 100
  - None of these

**PROFIT AND LOSS**

3. Savita buys 5 shirts and 10 pants for Rs. 1600. She sells shirts at a profit of 15% and pants at a loss of 10%. If her overall profit was Rs. 90, what was the cost price of a shirt and a pant?  
 (a) Rs. 175, Rs. 50      (b) Rs. 200, Rs. 50  
 (c) Rs. 200, Rs. 60      (d) Cannot be determined  
 (e) None of these

4. At a cost of 60 paise per article, Sarika produces 750 articles. She puts the selling price such that if only 600 articles are sold, she would have made a profit of 40% on the outlay. However, 120 articles got spoilt and she was able to sell 630 articles at this price. Find her actual profit or loss percent as the percentage of total outlay assuming that the unsold articles are useless.  
 (a) 47% profit      (b) 51% profit      (c) 36% loss  
 (d) 28% loss      (e) None of these

5. Kritika bought 25 i-pads and i-phones for Rs. 205000. She sold 80% of the i-pads and 12 i-phones for a profit of Rs. 40000. Each i-pad was marked up by 20% over cost and each i-phone was sold at a profit of Rs. 2000. The remaining i-pads and 3 i-phones could not be sold. What is Kritika's overall profit/loss?  
 (a) Rs. 500 profit      (b) Rs. 1000 loss  
 (c) Rs. 1500 profit      (d) no profit, no loss  
 (e) None of these

6. Sasha goes to a shop to buy a sofa set and a center table. She bargains for a 10% discount on the center table and a 25% discount on sofa set. However, the manager, by mistake, interchanged the discount percentage figures while making the bill and Sasha paid accordingly. When compared to what she should pay for her purchases, what percentage did Sasha pay extra given that the center table costs 40% as much as the sofa set.  
 (a) 7.1%      (b) 7.5%      (c) 7.9%  
 (d) 8.1%      (e) None of these

7. Paras Health Care made 3000 strips of vitamin tablets at a cost of Rs. 4800. The company gave away 1000 strips of tablets to doctors as free samples. A discount of 25% is given on the printed price. Find the ratio of profit if the price is raised from Rs. 3.25 to Rs. 4.25 per strip and if at the latter price, samples to doctors were done away with.

- (a) Rs. 36.7      (b) Rs. 49.3      (c) Rs. 63.5  
 (c) Rs. 71.7      (e) None of these

8. APD printed 3000 copies of 'Career Power' at a cost of Rs. 240000. It gave 500 copies free to different philanthropic institutions. It allowed a discount of 25% on the published price and gave one copy free for every 25 copies bought at a time. It was able to sell all the copies in this manner. If the published price is Rs. 325, then what is its overall gain or loss percentage in the whole transaction?

- (a) 89% gain      (b) 120% loss      (c) 140% loss  
 (d) 143.75% gain      (e) None of these

**QUANTITATIVE APTITUDE**

9. Surbhi bought a combined total of 25 i-pads and i-phones. She marked up the i-pad by 20% on the cost price, while each i-phone was marked up by Rs. 2000. She was able to sell 75% of the i-pads and 2 i-phones and make a profit of Rs. 49000. The remaining i-pads and 3 i-phones could not be sold by her. Find her overall profit or loss if she gets no return on unsold items and it is known that an i-phone costs 50% of an i-pad.

- (a) Gain of Rs. 48500      (b) Loss of Rs. 48500  
 (c) Gain of Rs. 51400      (d) no profit, no loss  
 (e) None of these

10. A merchant buys 4000 kg of wheat, one-fifth of which he sells at a gain of 5 per cent, one-fourth at a gain of 10%, one-half at a gain of 12 percent, and the remainder at a gain of 16 percent. If he had sold the whole at a gain of 11 percent, he would have made Rs. 72.80 more. What was the cost price of the crop per kg?  
 (a) Rs. 2      (b) Rs. 2.60      (c) Rs. 2.50  
 (d) Rs. 2.80      (e) None of these

11. Ajit calculates his profit percentage on the selling price whereas Rohit calculates his on the cost price. They find that the difference of their profits is Rs. 100. If the selling price of both of them are the same and both of them get 25% profit, find their selling price?  
 (a) Rs. 1200      (b) Rs. 1500      (c) Rs. 1800  
 (d) Rs. 2000      (e) None of these

12. A pen was sold for a certain sum and there was a loss of 20%. Had it been sold for Rs. 12 more, there would have been a gain of 30%. What would be the profit if the pen was sold for Rs. 4.80 more than what it was sold for?  
 (a) 15%      (b) 23%      (c) 29%  
 (d) no profit, no loss      (e) None of these

13. A white goods dealer pays 10% custom duty on an i-phone that costs Rs. 25000 in UK. For how much should he mark it, if he desires to make a profit of 20% after giving a discount of 25% to the buyer?  
 (a) Rs. 32000      (b) Rs. 38000      (c) Rs. 44000  
 (d) Cannot be determined      (e) None of these

14. A cab driver makes a profit of 20% on every trip when he carries 3 passengers and the price of petrol is Rs. 30 a litre. Find the percentage profit for the same journey if he goes with four passengers per trip and the price of petrol reduces to Rs. 24 a litre?

(Assume that revenue per passenger is the same in both the cases.)

- (a) 100%      (b) 76%      (c) 54%  
 (d) 43%      (e) None of these

15. Anil bought an item with  $12\frac{1}{2}\%$  discount on the labelled price. He sold the item with  $17\frac{1}{2}\%$  profit on

## PROFIT AND LOSS

the labelled price. What was his percent profit on the price he bought?

- (a) 35% (b)  $34\frac{1}{7}\%$  (c)  $34\frac{2}{7}\%$   
 (d)  $35\frac{2}{7}\%$  (e) None of these

16. Divyam bought an article with 15% discount on the labelled price. He sold the article with 10% profit on the labelled price. What was his percent profit on the price he bought?

- (a)  $28\frac{7}{17}\%$  (b)  $29\frac{7}{17}\%$  (c)  $29\frac{5}{17}\%$   
 (d) Data inadequate (e) None of these

17. A shopkeeper sold Chairs at Rs. 2139 each after giving 7% discount on labelled price. Had he not given the discount, he would have earned a profit of 15% on the cost price. What was the cost price of each chair?

- (a) Rs. 2500 (b) Rs. 2100 (c) Rs. 2000  
 (d) Rs. 1900 (e) None of these

18. A shopkeeper sold decks at Rs. 166 each after giving 17% discount on labelled price. Had he not given the discount, he would have earned a profit of 25% on the cost price. What was the cost price of each deck?

- (a) Rs. 165 (b) Rs. 155 (c) Rs. 160  
 (d) Rs. 164 (e) None of these

19. A garment company declared 15% discount for wholesale buyers. Mr. Ashish bought garments from the company for Rs. 25000 after getting discount. He fixed up the selling price of garments in such a way that he earned a profit of 8% on original company price. What is the approximate total selling price?

- (a) Rs. 28000 (b) Rs. 29000 (c) Rs. 31700  
 (d) Rs. 28500 (e) None of these

20. A garment company declared 14% discount for wholesale buyers. Mr. Swami bought garments from the company for Rs. 860 after getting discount. He fixed up the selling price of garments in such a way that he earned a profit of 6% on original company price. What is the approximate total selling price?

- (a) Rs. 1060 (b) Rs. 1160 (c) Rs. 960  
 (d) Cannot be determined (e) None of these

## Previous Year (Memory Based)

1. Abhishek makes a profit of Rs. 110, if he sells a certain number of pens he has at the price of Rs. 2.5 per pen and incurs a loss of Rs. 55, if he sells the same number of pens for Rs. 1.75 per pen. How many pens does Abhishek have?

- (a) 220 (b) 240 (c) 200  
 (d) Cannot be determined (e) None of these

2. Ram purchased a Computer set of Rs. 12500 and spent Rs. 300 on transportation and Rs. 800 on installation. At what price should he sell it so as to earn an overall profit of 15%?

- (a) Rs. 14560 (b) Rs. 14375 (c) Rs. 15460  
 (d) Rs. 15375 (e) None of these

3. Mahesh purchased 25 kg of rice @ 32 per kg and 15 kg of rice @ Rs. 36 per kg. He mixed the two varieties of rice and sold it @ Rs. 40.20 per kg. What is the per cent profit earned?

- (a) 25 (b) 40 (c) 30  
 (d) 20 (e) None of these

4. While selling a watch, a shopkeeper gives a discount of 15%. If he gives a discount of 20%, he earns Rs. 51 less as profit. What is the original price of the watch?

- (a) Rs. 920 (b) Rs. 985 (c) Rs. 1125  
 (d) Rs. 1020 (e) None of these

5. A shopkeeper purchased 245 pieces of an article at Rs. 30 per piece. He spent Rs. 980 on transport and Rs. 1470 on packing the articles. He sold the articles at the rate of Rs. 50 per piece. What is the percent profit earned?

- (a) 25% (b) 20% (c) 28%  
 (d) 22.5% (e) None of these

6. An article is marked for sale at Rs. 504. The shopkeeper gives a discount of 5% on the sale price and still earns a profit of 20%. What could be the purchase price of the article?

- (a) Rs. 399 (b) Rs. 405 (c) Rs. 403  
 (d) Rs. 400 (e) None of these

7. A shopkeeper sold an article for Rs. 400 after giving 20% discount on the labelled price and made 30% profit on the cost price. What would have been the percentage profit, had he not given the discount?

- (a) 25% (b) 35% (c) 50%  
 (d) 62.5% (e) None of these

8. Suresh purchased a TV set for Rs. 11250. He spent Rs. 800 on installation and Rs. 150 on transportation. At what price should it be sold so that the profit earned would have been 15%, if no discount was offered?

- (a) Rs. 12938 (b) Rs. 14030 (c) Rs. 13450  
 (d) Rs. 15467 (e) None of these

9. Mr A sold a goods, to Mr. B at 10% discounted value of printed rate. The discounted value is Rs. 1242. If 15% profit is earned on purchase rate by selling the goods at printed rate, what is the purchase rate?

- (a) Rs. 1242 (b) Rs. 1380 (c) Rs. 1280  
 (d) Rs. 1200 (e) None of these

10. Rajesh purchased a mobile phone and a refrigerator for Rs. 12000 and Rs. 10000 respectively. She sold the refrigerator at a loss of 12 per cent and mobile phone at a profit of 8 per cent. What is her overall loss/profit?

**PROFIT AND LOSS**

- (a) Loss of Rs. 280      (b) Profit of Rs. 2160  
 (c) Loss of Rs. 240      (d) Profit of Rs. 2060  
 (e) None of these

12. Abhishek purchased 140 shirts and 250 trousers @ Rs. 450 and @ Rs. 550 respectively. What should be the overall average selling price of shirts and trousers so that 40% profit is earned? (rounded off to next integer)  
 (a) Rs. 725      (b) Rs. 710      (c) Rs. 720  
 (d) Rs. 700      (e) None of these

13. A trader marks his goods 40% above the cost price and allows a discount of 25%. The profit he makes, is  
 (a) 15%      (b) 10%      (c) 5%  
 (d) 2%      (e) None of these

14. A man sold his two cars for Rs. 4.5 lakh each. In the sale of first car, he incurred 20% profit and in the sale of the second, he incurred 20% loss. The total amount of profit or loss is?  
 (a) profit of Rs. 20250      (b) loss of Rs. 20250  
 (c) profit of Rs. 37500      (d) loss of Rs. 37500  
 (e) None of these

15. By selling an article at 80% of its marked price, a shopkeeper makes a loss of 10%. What will be the profit percentage if he sells it at 95% of its marked price?  
 (a) 6.9%      (b) 5%      (c) 5.9%  
 (d) 12.5%      (e) None of these

16. A trader purchase a wrist watch and a pendulum for Rs. 390. He sells them making a profit of 10% on the watch and 15% on the pendulum. He earns a profit of Rs. 51.50. The difference between the original prices of the pendulum and the watch is equal to?  
 (a) Rs. 80      (b) Rs. 120      (c) Rs. 110  
 (d) Rs. 100      (e) None of these

17. A tradesman gives 4% discount on the marked price and gives 1 book free for buying every 15 books and thus gains 35%. The marked price is increased above the cost price by (appx.)  
 (a) 40%      (b) 35%      (c) 50%  
 (d) 20%      (e) None of these

18. A shopkeeper purchased 150 identical pieces of furniture at the rate of Rs. 250 each. He spent an amount of Rs. 2500 on packing. He fixed the price of each each furniture at Rs. 320. However, he decided to give a discount of 5% on the labeled price. What is the percent profit earned by him?  
 (a) 16%      (b) 15%      (c) 14%  
 (d) 20%      (e) None of these

19. An Ox and a carriage together cost Rs. 8000. The ox is sold at profit of 10% and carriage is sold at loss of 10%. If total profit made is 2.5%, then what is the cost price of the ox?  
 (a) Rs. 3000      (b) Rs. 3500      (c) Rs. 4000  
 (d) Rs. 5000      (e) None of these

20. With a 5% discount on the cost of sugar, a buyer could purchase 2 kg more sugar for Rs. 608. Selling price of sugar is?

**QUANTITATIVE APTITUDE**

- (a) Rs. 15.50      (b) Rs. 15      (c) Rs. 16.50  
 (d) Rs. 16      (e) None of these

21. A trader marked his goods at 20% above the cost price. He sold half the stock at the marked price, one quarter at a discount of 20% on the marked price and the rest at a discount of 40% on the marked price. His total gain is?

- (a) 2%      (b) 4.5%      (c) 13.5%  
 (d) 15%      (e) None of these

22. A shopkeeper marks his goods at 25% above his cost price and allows customers a discount of  $12\frac{1}{2}\%$  for cash. Find his % profit?

- (a)  $12\frac{4}{5}\%$       (b)  $9\frac{3}{7}\%$       (c)  $7\frac{5}{8}\%$   
 (d)  $9\frac{3}{8}\%$       (e) None of these

23. A trader put the price of his goods 25% above cost price but allows 12.5% discount for cash payment. If he sells the goods for Rs. 875, find the cost price of the goods?

- (a) Rs. 800      (b) Rs. 875      (c) Rs. 925  
 (d) Rs. 975      (e) None of these

24. Harkesh bought a certain quantity of tomato at the rate of Rs. 1500 per quintal. 10% of the tomato was spoiled. At what price should he sell the remaining to gain 20% of his outlay?

- (a) Rs. 1800 per quintal      (b) Rs. 2000 per quintal  
 (c) Rs. 2200 per quintal      (d) Rs. 2400 per quintal  
 (e) None of these

25. Aman buys 5 laptops and 7 computers for Rs. 58500. He sells the laptops at a profit of 10% and computers at a profit of 16% and his whole gain is Rs. 7110. What price does he pay for a laptop?

- (a) Rs. 7500      (b) Rs. 8200      (c) Rs. 9100  
 (d) Rs. 10500      (e) None of these

26. A reduction of 10% in the price of rice enables to obtain 25 kg more for Rs. 2250. Find the reduced price per kg of the rice.

- (a) Rs. 8.50      (b) Rs. 9      (c) Rs. 10.50  
 (d) Rs. 11      (e) None of these

27. A shopkeeper mixes 26 kg of wheat which cost Rs. 20 a kg with 30 kg of wheat which cost Rs. 36 a kg and sells the mixture at Rs. 30 a kg. Find the profit percent.

- (a) 5%      (b) 9%      (c) 12%  
 (d) 15%      (e) None of these

28. A sold a pen to B at a profit of 20%, B sold the same pen to C for Rs. 75 thereby making a profit of 25%. Find the price at which A bought the pen?

- (a) Rs. 20      (b) Rs. 42      (c) Rs. 50  
 (d) Rs. 64      (e) None of these

Alligation concept

10  
2.5  
2  
2

**PROFIT AND LOSS**

28. Seema sells a pen to Sapna at a profit of 25%. Sapna sells it to Asha at a profit of 10% and Asha sells it to Kavita at a profit of 5%. If Asha sells it for Rs. 231, find the cost price at which Seema bought the pen?  
 (a) Rs. 195    (b) Rs. 160    (c) Rs. 145  
 (d) Rs. 135    (e) None of these
29. Mohit purchased 40 kg of wheat at Rs. 12.50 per kg and 25 kg of wheat at Rs. 15.10 per kg. He mixed the two qualities of wheat for selling. At what rate should it be sold to gain 10%?

**Foundation****Solutions**

1. (a); CP = Rs. 27.50, SP = Rs. 28.60  
 Then Gain = SP - CP = 28.60 - 27.50 = Rs. 1.10

$$\text{Since, } \text{Gain\%} = \frac{\text{gain} \times 100}{\text{CP}} \%$$

$$\Rightarrow \text{Gain\%} = \frac{1.10 \times 100}{27.50} = 4\%$$

2. (b); CP = Rs. 490, SP = Rs. 465.50  
 Loss = CP - SP = 490 - 465.50 = Rs. 24.50

$$\text{Loss\%} = \frac{\text{loss} \times 100}{\text{CP}} \% = \frac{24.50 \times 100}{490} = 5\%$$

3. (b); SP =  $\left[ \frac{100 + \text{gain\%}}{100} \right] \times \text{CP}$

$$\Rightarrow \text{SP} = \left[ \frac{100 + 20}{100} \right] \times 56.25 = \text{Rs. } 67.50$$

4. (c); SP =  $\left[ \frac{100 - \text{loss\%}}{100} \right] \times \text{CP}$

$$\Rightarrow \text{SP} = \left[ \frac{100 - 5}{100} \right] \times 80.40 = \text{Rs. } 76.38$$

5. (a); CP =  $\frac{100 \times \text{SP}}{100 + \text{gain\%}}$

$$\Rightarrow \text{CP} = \frac{100 \times 40.60}{100 + 16} = \text{Rs. } 35$$

6. (a); CP =  $\frac{100 \times \text{SP}}{100 - \text{loss\%}}$

$$\Rightarrow \text{CP} = \frac{100 \times 51.70}{100 - 12} = \text{Rs. } 58.75$$

7. (c); Let the new SP be Rs. x then

$$\frac{100 - \text{loss\%}}{1 \text{st SP}} = \frac{100 + \text{gain\%}}{2 \text{nd SP}}$$

(CP is same in both case)

30. (a) Rs. 13.25    (b) Rs. 13.50    (c) Rs. 14.75  
 (d) Rs. 14.85    (e) None of these  
 If the cost price of 20 articles is equal to the selling price of 15 articles, find the profit percent?  
 (a)  $33\frac{1}{2}\%$     (b)  $33\frac{1}{3}\%$     (c)  $33\frac{1}{5}\%$   
 (d)  $33\frac{1}{7}\%$     (e) None of these

14. (d);

15. (b);

16.;

17.;

$$\frac{100 - 5}{1140} = \frac{100 + 5}{x}, x = \frac{105 \times 1140}{95} = \text{Rs. } 1260$$

8. (e); Let SP = Rs. 100 then CP = Rs. 96  
 Profit = SP - CP = 100 - 96 = Rs. 4

$$\text{Profit\%} = \frac{\text{profit}}{\text{CP}} \times 100\% = \frac{4}{96} \times 100 = 4.17\%$$

9. (c); Here, True weight = 1000g.  
 False weight = 960g.  
 Error change = (1000 - 960)g. = 40g.

$$\Rightarrow \text{Gain\%} = \frac{\text{Error change}}{\text{True weight} - \text{Error}} \times 100\% \\ = \frac{40}{1000 - 40} \times 100\% = \frac{25}{6}\%$$

10. (d); Here, since both gain and loss percent is same, hence the resultant value would be loss percent only.

$$\Rightarrow \text{Loss\%} = \frac{a^2}{100} [ \text{where } a = 10\% ] \\ = 1\%$$

11. (c); Using net discount formula

$$\Rightarrow \left[ a + b - \frac{ab}{100} \right]\%$$

Here, a = 40%, b = 20%

Applying both values in above formula:

$$\Rightarrow \left[ 40 + 20 - \frac{40 \times 20}{100} \right]\% = 52\%$$

12. (e); Using simple formula of

$$\text{Profit} = \text{SP} - \text{CP} = 9700 - 9450 = \text{Rs. } 250$$

[Total 5 watches]

$$\text{Profit of 1 watch} = \frac{\text{Rs. } 250}{5} = \text{Rs. } 50$$

13. (a); Here, cost of 12 chairs and 8 tables = Rs. 676

On dividing above equation by 4

$$\Rightarrow \text{Cost of 3 chairs and 2 tables} = \text{Rs. } 676 \times \frac{1}{4}$$

**PROFIT AND LOSS**

Now multiply it by 7

$\Rightarrow$  Cost of 21 chairs and 14 tables

$$= \text{Rs. } 676 \times \frac{7}{4} = \text{Rs. } 1183$$

14. (d); Let CP be Rs. 100

Then SP = Rs. 112. (12% more than CP)

$\Rightarrow$  Now if SP = Rs. 17696

Then by unitary method:

$$\Rightarrow \text{CP} = \frac{100}{112} \times 17696 = \text{Rs. } 15800$$

15. (b); Total SP given = Rs. 1220

Total CP of 13 chairs = Rs.  $13 \times 115$  = Rs. 1495

$\Rightarrow$  Hence, CP > SP

$\Rightarrow$  Loss = CP - SP = Rs.  $1495 - 1220$  = Rs. 275

16. (a); Here, MP = Rs. 500

Now since we need discount of 20%

$$\Rightarrow \text{Amount paid} = \text{Rs. } \left[ 500 - 500 \times \frac{20}{100} \right] = \text{Rs. } 400$$

17. (a); Here, profit% = 20%

$$\Rightarrow P\% = \left[ \frac{SP - CP}{CP} \right] \times 100\% \Rightarrow \frac{20}{100} = \frac{360 - CP}{CP}$$

$$\Rightarrow CP = \text{Rs. } 300$$

18. (a); Here, profit = loss

$$\Rightarrow \text{Here, profit} = (SP)_1 - (CP)$$

$$\text{and, Loss} = (CP) - (SP)_2$$

Now putting these values in (i)

$$(SP)_1 - (CP) = (CP) - (SP)_2$$

$$CP = \frac{(SP)_1 + (SP)_2}{2} = \text{Rs. } \frac{1630 + 1320}{2} = \text{Rs. } 1475$$

19. (c); As, CP of 50 items = SP of 40 items

$$\Rightarrow 50 \times (\text{CP of 1 item}) = 40 \times (\text{SP of 1 item})$$

$$\Rightarrow \frac{\text{CP of 1 item}}{\text{SP of 1 item}} = \frac{40}{50} = \frac{4}{5}$$

$$\text{Profit\%} = \frac{SP - CP}{CP} = \frac{5 - 4}{4} \times 100 = 25\%$$

20. (a); Cost of 1 banana = Rs. 1.25

Cost of 1 apple = Rs. 1.75

Cost of 2 dozen banana = Rs.  $24 \times 1.25$  = Rs. 30

Cost of 3 dozen apple = Rs.  $36 \times 1.75$  = Rs. 63

Total cost = Rs.  $(30 + 63)$  = Rs. 93

21. (d); The formula to determine MP of watch if we are given SP and discount% is:

$$\Rightarrow \left[ \frac{SP}{100 - D\%} \times 100 = MP \right]$$

$$MP = \frac{779}{76} \times 100 = \text{Rs. } 1025$$

**QUANTITATIVE APTITUDE**

22. (b); Let cost of 1 calculator be Rs. 'C'

and cost of 1 pen be Rs. 'P'

According to question:

$$3C + 4P = 2140$$

$$1C + 5P = 1355$$

Solving (i) and (ii)

We get C = Rs. 480 [cost of 1 calculator]

... (ii)

23. (c); CP of 6 toffees = Rs. 1, CP of 1 toffee = Rs.  $\frac{1}{6}$

SP of x toffees = Rs. 1

(where x is no. of toffees to sell)

$$\text{SP of 1 toffee} = \text{Rs. } \frac{1}{x}$$

$$\text{Gain\%} = \frac{20}{100} = \frac{\frac{1}{x} - \frac{1}{6}}{\frac{1}{6}} \Rightarrow \frac{1}{5} \times \frac{1}{6} = \frac{1}{x} - \frac{1}{6} \Rightarrow x = 5$$

24. (d); Using Net Loss formula =  $\frac{a^2}{100}\%$  [when P% = L%]

$$= \frac{(10)^2}{100}\% = 1\% \text{ Loss}$$

25. (d); Let CP = Rs. 1

$$\text{SP} = \text{Rs. } \frac{4}{3} \text{ (Given), Profit} = \frac{4}{3} - 1 = \frac{1}{3}$$

$$\text{Profit\%} = \frac{1}{3} \times 100 = 33\frac{1}{3}\%$$

26. (e); Here, Net Loss% =  $\left( \frac{a}{10} \right)^2 \%$  = 1% Loss

$\rightarrow$  So, Loss of 1% on Rs. 10 lakh = Rs. 10,000

27. (d); Using net effective formula,

$$\Rightarrow 10 - 20 - \frac{10 \times 20}{100} = 12\% \text{ Loss}$$

Hence, 12% Loss

28. (c); Total CP =  $200 \times 10 + 500$  = Rs. 2500

Total SP =  $1 \times 200 \times 12$  = Rs. 2400

$$\% \text{ loss} = \frac{100}{2500} \times 100 = 4\%$$

29. (b); CP of 11 Mangoes = Rs. 10

$$\Rightarrow \text{CP of 10 Mangoes} = \text{Rs. } \left[ 10 \times \frac{10}{11} \right] = \text{Rs. } \frac{100}{11}$$

SP of 10 Mangoes = Rs. 11

$$\% \text{ profit} = \frac{\frac{11 - 10}{11} \times 100}{\frac{100}{11}} \times 100\% = 21\%$$

## PROFIT AND LOSS

30. (b); CP of 20 articles = SP of  $x$  articles  
 $20 \times CP$  of 1 article =  $x \times SP$  of 1 article

$$\Rightarrow \frac{CP \text{ of 1 article}}{SP \text{ of 1 article}} = \frac{x}{20}$$

$$\text{Profit\%} = \frac{25}{100} = \frac{SP - CP}{CP} \Rightarrow \frac{1}{4} = \frac{20 - x}{x}$$

$$x = Rs. 16$$

31. (b); Let profit be  $P$   
Now,  $SP - CP = P$  ... (i)  
In given question, when  $SP$  is doubled,  $P$  get tripled

$$2SP - CP = 3P$$

On solving (i) and (ii)  
We get  $CP = P$  and  $SP = 2P$

$$\text{Profit\%} = \frac{2P - P}{P} \times 100 = 100\%$$

32. (d); CP of 6 articles = Rs. 5, CP of 5 articles = Rs.  $\frac{25}{6}$   
SP of 5 articles = Rs. 6

$$\% \text{ gain} = \frac{6 - \frac{25}{6}}{\frac{25}{6}} \times 100 = \frac{11}{25} \times 100 = 44\%$$

33. (c); CP of 12 tables = SP of 16 tables

$$\frac{CP \text{ of 1 table}}{SP \text{ of 1 table}} = \frac{16}{12} = \frac{4}{3}$$

$$\% \text{ Loss} = \frac{4 - 3}{4} \times 100 = 25\%$$

34. (c); Using net discount formula =  $[a + b - \frac{ab}{100}] \%$

where  $a = b = 4\%$

$$\Rightarrow [4 + 4 - \frac{4 \times 4}{100}] \% = 7.84\%$$

35. (b); Let CP for A be Rs. 100  
A sells it to B at 20% profit  
Rs.  $[100 + 20\% \text{ of } 100] =$  Rs. 120  
Now B sells it to C at 25% profit  
Rs.  $[120 + 25\% \text{ of } 120] =$  Rs. 150  
If C buys at Rs. 150, A bought at Rs. 100  
Hence, by unitary method,

$$\text{If C bought at Rs. 1500, A paid} = \text{Rs.} \left[ \frac{100}{150} \times 1500 \right] \\ = \text{Rs. 1000}$$

36. (d); Total CP = Rs.  $[70 + 17 + 0.5] =$  Rs. 87.50  
 $SP =$  Rs. 100

$$\text{Profit\%} = \frac{12.50}{87.50} \times 100 = 14.3\%$$

37. (d); Let CP = Rs. 100, MP = Rs. 120

$$\text{The SP after discount} = 120 \times \frac{70}{100} = 84 \text{ Rs.}$$

[30% discount]

So loss = 16%  $[CP - SP]$

38. (d); Using net discount formula

$$\left[ 40 + 30 - \frac{40 \times 30}{100} \right] = 58\%$$

39. (e); Given Loss% = 10%

$$\Rightarrow 10\% = \left( \frac{CP - SP}{CP} \right) \times 100$$

$$\frac{10}{100} = \frac{390 - SP}{390}, SP = \text{Rs. 351}$$

40. (a); Here, Profit% = 10%

$$\Rightarrow \frac{10}{100} = \frac{SP - CP}{CP} \Rightarrow \frac{1}{10} = \frac{924 - CP}{CP}$$

$$11CP = 9240 \Rightarrow CP = \text{Rs. 840}$$

## Moderate

1. (b); 110% of SP = 616 (Rate of sales tax = 10%)

$$SP = \frac{616 \times 100}{110} = \text{Rs. 560}, CP = \frac{100 \times SP}{100 + \text{gain\%}}$$

$$CP = \frac{100 \times 560}{100 + 12} = \text{Rs. 500}$$

2. (c); Let the total value be Rs  $x$

$$\text{then value of } \frac{2}{3} \text{ rd} = \text{Rs. } \frac{2x}{3},$$

value of  $\frac{1}{3}$  rd = Rs.  $\frac{x}{3}$

According to question

$$\frac{2}{3} \times \left( \frac{5}{100} \right) - \frac{1}{3} \times \left( \frac{2}{100} \right) = 400$$

$$\frac{x}{30} - \frac{x}{150} = 400 \Rightarrow \frac{5x - x}{150} = 400$$

$$\Rightarrow x = \text{Rs. 15000}$$

**PROFIT AND LOSS**

3. (c); Let the CP of each article be Rs. 100  
Then CP of 16 articles = Rs.  $(100 \times 16) = 1600$   
SP of 16 articles =  $1600 \times \frac{135}{100} = \text{Rs. } 2160$   
(1 article free)

$$\text{SP of each article} = \frac{2160}{16} = \text{Rs. } 135$$

If SP is Rs. 96, marked price = Rs. 100  
If SP is Rs. 135, marked price

$$= \frac{100}{96} \times 135 = \text{Rs. } 140.625$$

Therefore marked price  $\approx$  40% above CP

4. (c); Let retail price = Rs. 100  
then, Commission = Rs. 36  
SP = retail price - concession =  $100 - 36 = \text{Rs. } 64$   
But profit = 8.8%

$$\text{CP} = \frac{100 \times \text{SP}}{100 + \text{gain}\%} = \frac{100 \times 64}{100 + 8.8} = \text{Rs. } \frac{1000}{17}$$

New commission = Rs. 12 then

$$\text{New SP} = 100 - 12 = \text{Rs. } 88$$

$$\text{Gain} = 88 - \frac{1000}{17} = \text{Rs. } \frac{496}{17}$$

$$\text{Gain}\% = \text{gain} \times \frac{100}{\text{CP}} = \frac{\frac{496}{17}}{1000} \times 100 = 49.6\%$$

5. (a); Let the investments be Rs.  $3x$  and Rs.  $5x$   
Then total investment =  $8x$   
Total receipt = 115% of  $3x$  + 90% of  $5x$

$$= 115 \times \frac{3x}{100} + 90 \times \frac{5x}{100} = 7.95x$$

$$\text{Loss} = \text{CP} - \text{SP} = 8x - 7.95x = 0.05x$$

$$\text{loss}\% = 0.05x \times \frac{100}{8x} = 0.625\%$$

6. (d); Let CP be Rs.  $x$   
then,  $900 - x = 2(x - 450)$  [Profit = 2 Loss]  
 $3x = 1800 \Rightarrow x = \text{Rs. } 600$   
CP = Rs. 600, gain required = 25%

$$\text{SP} = (100 + \text{gain}\%) \times \frac{\text{CP}}{100}$$

$$\text{SP} = (100 + 25) \times \frac{600}{100} = \text{Rs. } 750$$

7. (d); Here initially SP of some article = Rs. 35  
Profit% = 40%  
Now, finally SP of articles = Rs.  $x$   
Profit% = 60%  
Here, CP is same in each case

**QUANTITATIVE APTITUDE**

- $\Rightarrow (\text{CP})_1 = (\text{CP})_2$   
 $\Rightarrow \frac{(\text{SP})_1}{100 + P_1\%} = \frac{(\text{SP})_2}{100 + P_2\%}, \frac{35}{140} = \frac{x}{160}, x = \text{Rs. } 40$

8. (c); Let price of sugar per kg is  $x$  so  
 $\frac{135}{x} - \frac{135}{1.2x} = 1.5$  [as given in question]

$$135 \left( \frac{0.2}{1.2x} \right) = 1.5, x = \frac{135 \times 0.2}{1.2 \times 1.5} = \text{Rs. } 15 \text{ per kg}$$

- Increased price =  $15 \times 1.2 = \text{Rs. } 18 \text{ per kg}$   
9. (b); Total CP of mixture =  $26 \times 20 + 30 \times 36$   
 $520 + 1080 = \text{Rs. } 1600, \text{ SP} = 30 \times 56 = \text{Rs. } 1680$   
 $\% \text{ profit} = \frac{80}{1600} \times 100 = 5\%$

10. (c); The SP of TV in Chandigarh = Rs.  $x$   
The dealer bought it at Delhi at = Rs. 0.8x  
[Discount of 20%]  
Total CP of TV set (including transportation cost)  
Rs.  $0.8x + 600$

$$\text{Given Profit}\% = 14\frac{2}{7}\%$$

$$\frac{100}{7} = \left( \frac{(x) - (0.8x + 600)}{(0.8x + 600)} \right) \times 100$$

$$\frac{1}{7} = \left( \frac{0.2x - 600}{0.8x + 600} \right), \text{ On solving, } x = \text{Rs. } 8000$$

11. (c); MP of chair = Rs. 800  
After getting successive discount of 10% and 15% respectively

$$\Rightarrow \text{CP of chair} = \text{Rs. } \left[ 800 \times \frac{90}{100} \times \frac{85}{100} \right] = \text{Rs. } 612$$

Total CP (including transportation cost)  
 $612 + 28 = \text{Rs. } 640$

$$\text{Profit}\% = \frac{800 - 640}{640} \times 100 = 25\%$$

12. (c); Let us assume that cost of the book is Rs. 100 and Market Price is Rs. 140  
If we sell the book at half of MP

$$\text{then selling Price} = \frac{140}{2} = \text{Rs. } 70$$

So percent loss =  $(100 - 70) = 30\%$  loss

13. (c); Price of 14 shirt =  $14 \times 45 = \text{Rs. } 630$   
25 pant =  $25 \times 55 = \text{Rs. } 1375$   
Total price of 39 items = Rs. 2005

$$\text{Price} = \frac{2005}{39} \times 1.40 \quad [\text{Overall profit} = 40\%]$$

$$= 71.97 = \text{Rs. } 72 \text{ (Approx)}$$

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14. (a); Here, CP is same in both transactions

$$(CP)_1 = (CP)_2$$

$$\frac{(SP)_1}{100-x} = \frac{(SP)_2}{100+y}$$

[Where  $x = 4\%$  Loss  
 $y = 8\%$  Gain]

$$(SP)_1 \text{ of 1 apple} = \text{Rs. } \frac{1}{36}$$

$$\Rightarrow \frac{1}{36} = \frac{(SP)_2}{100+8}, (SP)_2 = \frac{108}{96} \times \frac{1}{36} = \text{Rs. } \frac{1}{32}$$

Hence, in a rupee, the person can sell 32 apples.

15. (a); Here, Aditya paid Rs. 59.40 for article  
But before that there were 3 transactions of gain  
20%, 10% and 12.5%  
So, initially Ram would have bought article at  
Rs.  $x$

$$\Rightarrow x \times \frac{100+20}{100} \times \frac{100+10}{100} \times \frac{100+12.5}{100}$$

$$= \text{Rs. } 59.40$$

$$x = \frac{59.40 \times 100 \times 100 \times 100}{120 \times 110 \times 112.5} = \text{Rs. } 40$$

16. (a); Let CP of whole fruit = Rs. A

He sold  $\frac{3}{5}$ th part at 10% profit and remaining

$\frac{2}{5}$ th part at 5% loss

Total profit = Rs. 1500

$$1500 = \left[ \frac{3}{5} \times A \times \frac{10}{100} - \frac{2}{5} \times A \times \frac{5}{100} \right]$$

On solving above equation we get:

Total CP = A = Rs. 37,500

17. (b); Case - 1

Here, CP = Rs. 100, SP = Rs. 125

Profit of 1st shopkeeper = 25%

Case - 2

Here, CP = Rs. 125, SP = Rs. 100

$$\text{Loss of 2nd shopkeeper} = \left( \frac{125-100}{125} \right) \times 100\% = 20\%$$

18. (a); Here, the successive discounts given are 10% and  $x\%$

$$2400 \times \frac{90}{100} \times \frac{(100-x)}{100} = 1836$$

$$(100-x) = \frac{1836 \times 100 \times 100}{2400 \times 90} = 85$$

So discount =  $100 - 85 = 15\%$

19. (b); Three successful discount equivalent to

$$\left[ x + y + z - \frac{xy + yz + zx}{100} + \frac{xyz}{(100)^2} \right] \%$$

(where  $x = 10\%$ ,  $y = 12\%$ ,  $z = 15\%$ )

$$\left[ 10 + 12 + 15 - \frac{10 \times 12 + 12 \times 15 + 15 \times 10}{100} + \frac{10 \times 12 \times 15}{(100)^2} \right] \%$$

$$37 - 4.50 + 0.18 = 32.68\%$$

20. (d); Let the original price be Rs.  $x$

$$\Rightarrow \text{Loss of } 19\% = \text{Rs. } (x - 0.19x)$$

$$= \text{Rs. } 0.81x \text{ (old price)}$$

$$\Rightarrow \text{Profit of } 17\% = \text{Rs. } (x + 0.17x)$$

$$= \text{Rs. } 1.17x \text{ (new price)}$$

$$(\text{New price}) - (\text{Old price}) = \text{Rs. } 162$$

[According to given question]

$$1.17x - 0.81x = 162, x = \frac{162}{0.36} = \text{Rs. } 450$$

21. (b); Let CP = Rs. 100, Then SP = Rs. 123.5

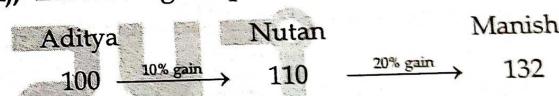
Here discount of 5% is given

Let Mark Price be  $x$  Rs. then

$$x = \frac{123.50}{95} \times 100 = \text{Rs. } 130$$

So profit on Marked Price =  $130 - 100 = 30\%$

22. (a); Let the original price bought by Aditya = Rs. 100



If Manish bought goods at Rs. 132

Initial CP = Rs. 100

Now, Manish bought goods at Rs. 1914

$$\text{Initial CP} = \text{Rs. } \left[ \frac{100}{132} \times 1914 \right] = \text{Rs. } 1450$$

23. (c); Initial CP = Rs. 9600

SP after selling it at 12% Loss =  $\text{Rs. } 9600 \times \frac{88}{100}$

New CP = Rs. 8448

Final SP after selling new CP price at 12% gain

$$\Rightarrow \text{Rs. } 8448 \times \frac{112}{100} = \text{Rs. } 9461.76$$

So, Total Loss = Initial CP - Final SP

$$= \text{Rs. } [9600 - 9461.76] = \text{Rs. } 138.24$$

24. (b); Total CP

$$= [\text{CP of 30 dozen orange}] + [\text{CP of stall fee}]$$

$$\Rightarrow 8 \times 30 + 500 = \text{Rs. } 740$$

Here, Nutan calculated that each glass needs

oranges and she wants to make 20% profit

$$\text{Per glass price} = \frac{740}{30 \times 12} \times 3 \times 1.20 = \text{Rs. } 7.40$$

25. (c); Let CP = Rs. 100  
then total CP after repair =  $100 + 15 = \text{Rs. } 115$   
after getting 20% profit  
 $SP = 115 \times 1.20 = \text{Rs. } 138$   
but SP given is Rs. 1104

$$\text{so } CP = \frac{100}{138} \times 1104 = \text{Rs. } 800$$

26. (b); Let CP = Rs. 100  
After 320% profit SP = Rs. 420  
After increasing cost the,  
CP = Rs. 125 [25% cost increase]  
Profit =  $420 - 125 = \text{Rs. } 295$   
 $\frac{295}{420} \times 100 = 70\%$  (Appx.)

27. (b); CP of 1<sup>st</sup> item =  $\frac{840}{1.2} = \text{Rs. } 700$  [gain of 20%]

CP of 2<sup>nd</sup> item =  $\frac{960}{0.96} = \text{Rs. } 1000$  [loss of 4%]

Total CP =  $700 + 1000 = \text{Rs. } 1700$   
SP =  $840 + 960 = \text{Rs. } 1800$

%profit =  $\frac{100}{1700} \times 100 = 5\frac{15}{17}\%$

28. (a); Given MP = Rs. 600

Hence on giving successive discounts of 10% and 20%,

CP =  $600 \times \frac{90}{100} \times \frac{80}{100} = \text{Rs. } 432$

%profit =  $\frac{108}{432} \times 100 = 25\%$

29. (a); CP of each kg mango =  $\text{Rs. } \frac{21}{3} = \text{Rs. } 7$

SP of each kg mango =  $\text{Rs. } \frac{50}{5} = \text{Rs. } 10$

Profit = SP - CP = Rs. 3

Here, Rs. 3 is profit earned for 1 kg  
Similarly, Rs. 102 is profit earned for:

$$= \frac{1}{3} \times 102 = 34 \text{ kg}$$

30. (c); Old Profit% =  $\frac{15}{100} = \frac{(SP)_1 - CP}{CP}$  ... (i)

New Profit% =  $\frac{20}{100} = \frac{(SP)_2 - CP}{CP}$  ... (ii)  
[Here,  $(SP)_2 = \text{Rs. } 600$ ]

= From (ii), we get CP = Rs. 500  
Divide (i) and (ii):

$$\frac{3}{4} = \frac{(SP)_1 - 500}{600 - 500}$$

Hence,  $(SP)_1 = \text{Former Selling price} = \text{Rs. } 575$   
Case - 1: Successive discount of 10%, 10%, 30%

$$\Rightarrow 100 \times \frac{90}{100} \times \frac{90}{100} \times \frac{70}{100} = \text{Rs. } 56.7$$

Case - 2: Successive discount of 40%, 5%, 5%

$$\Rightarrow 100 \times \frac{60}{100} \times \frac{95}{100} \times \frac{95}{100} = \text{Rs. } 54.15$$

For Rs. 100, person can save Rs.  $(56.7 - 54.15)$   
= Rs. 2.55

Hence, for Rs. 10000, he can save

$$= \text{Rs. } \frac{2.55}{100} \times 10000 = \text{Rs. } 255$$

32. (b); CP of 1<sup>st</sup> article =  $\frac{99}{1.10} = \text{Rs. } 90$  [Profit of 10%]

CP of 2<sup>nd</sup> article =  $\frac{99}{0.99} = \text{Rs. } 100$  [Loss of 1%]

CP of both article together =  $100 + 90 = \text{Rs. } 190$   
SP of both article together =  $99 + 99 = \text{Rs. } 198$

$$\% \text{profit} = \frac{198 - 190}{190} \times 100 = 4\frac{4}{19}\%$$

33. (c); Here,  $(100 + \text{Profit})\% \text{ of CP}$  .

= Rs. (MP - 10% of MP)

$(100 + 35)\% \text{ CP} = \text{Rs. } (100 - 10)$

$(135)\% \text{ CP} = \text{Rs. } 90 \Rightarrow \text{CP} = \text{Rs. } \frac{200}{3}$

SP of article (at Rs. 30 less than MP) = Rs. 70

$$\text{Profit\%} = \frac{70 - \frac{200}{3}}{\frac{200}{3}} \times 100 = 5\%$$

34. (b); Let CP = Rs. 100

Then SP = Rs. 123.5

Let Marked Price be x Rs., then  $x = \frac{123.50}{76} \times 100$   
[on discount of 24%]

= Rs. 162.50

So profit on Marked Price =  $162.50 - 100 = 62.50\%$

35. (b); Loss =  $\frac{20}{100} = \frac{CP - 500}{CP}$

CP = Rs. 625

Now Profit =  $\frac{20}{100} = \frac{SP - 625}{625}$ , SP = Rs. 750

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**PROFIT AND LOSS**

36. (d); Here, CP of 19 article = SP of 15 article

$$\frac{CP \text{ of 1 article}}{SP \text{ of 1 article}} = \frac{15}{19}$$

$$\% \text{ gain} = \frac{19 - 15}{15} \times 100 = 26\frac{2}{3}\%$$

37. (e); Here, we need to determine only ratio of selling price only.

SP is directly proportional to profit %

$$= \frac{(SP)_1}{(SP)_2} = \frac{x + 0.04x}{x + 0.06x} = \frac{1.04x}{1.06x} = 52 : 53$$

38. (b); Let quantity sold at loss be  $x$  kg and let CP per kg be Rs. 1. Total CP = Rs. 24  
Total SP = Rs. [120% of (24 - x) + 95% of x]

$$= \text{Rs.} \left[ \frac{6}{5}(24 - x) + \frac{19x}{20} \right] = \text{Rs.} \left[ \frac{576 - 5x}{20} \right]$$

$$\frac{576 - 5x}{20} = 110\% \text{ of } 24, 576 - 5x = 528$$

$$5x = 48 \Rightarrow x = \text{Rs.} 9.6$$

39. (e); Let Mark Price is Rs. 100  
Selling Price = Rs. 90

$$\text{Cost Price is } \frac{90}{1.5} = \text{Rs.} 60$$

[on earning profit of 50%]

If discount is not given, Percentage Profit will be  $\frac{100 - 60}{60} \times 100 \Rightarrow$  So, Profit = 66.67%

40. (a); If we are given 3 successive discounts of 15%, 10% and 5%,  
So, the new reduced price after applying above discount on Rs. 10000

$$= 10000 \times \frac{85}{100} \times \frac{90}{100} \times \frac{95}{100} = \text{Rs.} 7267.50$$

### Difficult

1. (c); Let us assume the cost price of the phone to be Rs. 100. Then,

$$\text{Rs.} 100 \xrightarrow[\text{20\% profit}]{\text{sells at}} 100 \times 1.2 = \text{Rs.} 120 = (SP)_1$$

If she bought the phone at 20% less, i.e. at Rs. 80 then,

$$\text{Rs.} 80 \xrightarrow[\text{25\% profit}]{\text{sells at}} 80 \times 1.25 = \text{Rs.} 100 = (SP)_2$$

$$\text{So, } (SP)_1 - (SP)_2 = \text{Rs.} (120 - 100) \\ = \text{Rs.} 20 \text{ when cost price is Rs.} 100.$$

$$\text{But, } (SP)_1 - (SP)_2 = \text{Rs.} 180$$

$$\therefore \text{Cost price} = \frac{100}{20} \times 180 = \text{Rs.} 900$$

Hence, the cost price of the book is Rs. 900

2. (a); Let the CP of each pen be Rs. 100

At the profit of 10%, SP of 40 pens

$$= (100 + 10) \times 40 = \text{Rs.} 4400$$

At the profit of 20%, SP of 50 pens

$$= (100 + 20) \times 50 = \text{Rs.} 6000$$

$$\text{SP of 90 pens} = \text{Rs.} (4400 + 6000) = \text{Rs.} 10400$$

$$\text{CP of 90 pens} = \text{Rs.} (90 \times 100) = \text{Rs.} 9000$$

At the profit of 15%, SP of 90 pens

$$= \text{Rs.} (90 \times 115) = \text{Rs.} 10350$$

$$\text{Difference in SP} = \text{Rs.} (10400 - 10350) = \text{Rs.} 50$$

If the difference is Rs. 50, then CP = Rs. 100

If the difference is Rs. 40, then CP

$$= \frac{100 \times 40}{50} = \text{Rs.} 80$$

Hence, the cost price of each pen is Rs. 80.

3. (c); Let Rs. p be the cost price of a shirt and Rs. q be the cost price of a pant. Then,

$$\text{CP of 5 shirts} = \text{Rs.} 5p$$

$$\text{CP of 10 pants} = \text{Rs.} 10q$$

$$\therefore 5p + 10q = 1600 \quad \dots(i)$$

$$\text{Profit on the sale of 5 shirts} = \frac{15 \times 5p}{100} = \text{Rs.} \frac{3p}{4}$$

$$\text{Loss on the sale of 10 pants} = \frac{10q \times 10}{100} = \text{Rs.} q$$

Given,

$$\text{Profit on the shirts} - \text{Loss on pants} = \text{Rs.} 90$$

$$\Rightarrow \frac{3p}{4} - q = 90$$

$$\therefore 3p - 4q = 360 \quad \dots(ii)$$

Multiplying (i) by 3 and (ii) by 5 and then subtracting (ii) from (i), we get

$$50q = 3000 \Rightarrow q = \frac{3000}{50} = \text{Rs.} 60$$

Puting the value of q in (i) we get

$$5p = 1000 \Rightarrow p = \frac{1000}{5} = \text{Rs.} 200$$

Hence, the cost price of shirt is Rs. 200 each and the cost price of pant is Rs. 60 each.

**PROFIT AND LOSS**

4. (a); Total CP of articles =  $750 \times 0.6 = \text{Rs. } 450$   
 [CP of 1 article = Rs. 0.6]  
 By selling 600 articles, Sarika should make a 40% profit on the outlay. This means that the selling price for 600 articles should be  
 $1.4 \times 450 = \text{Rs. } 630$

Thus, selling price per article

$$= \frac{630}{600} = \frac{63}{60} = \text{Rs. } 1.05 \quad [\text{SP of 1 article}]$$

Since, Sarika sells only 630 articles at this price, her total recovery =  $1.05 \times 630 = \text{Rs. } 661.5$   
 Hence, actual profit percent

$$= \frac{661.5 - 450}{450} \times 100 = 47\%$$

Thus, Sarika earns 47% profit on her total investment.

5. (b); Total number of i-phones = 15  
 ∴ Total number of i-pads =  $25 - 15 = 10$   
 Total CP = Rs. 205000  
 Since, Kritika sells 80% of both goods at a profit of Rs. 40000, therefore, cost of 80% of the goods =  $0.8 \times 205000 = \text{Rs. } 164000$   
 Total amount recovered (or SP) = Rs.  $(164000 + 40000) = \text{Rs. } 204000$   
 Hence, loss = Rs.  $(205000 - 204000) = \text{Rs. } 1000$   
 Hence, Kritika's overall loss is Rs. 1000

6. (d); Let the cost of sofa set be Rs. 100. Then, the cost of centre table is Rs. 40 [40% of sofa set given]  
 According to Sasha, cost of centre table

$$= \frac{90}{100} \times 40 = \text{Rs. } 36$$

[10% discount on center table]

$$\text{and cost of sofa set} = \frac{75}{100} \times 100 = \text{Rs. } 75$$

[25% discount on sofa set]

According to manager, He inter changed discount % so, cost of centre table

$$= \frac{75}{100} \times 40 = \text{Rs. } 30$$

$$\text{and cost of sofa set} = \frac{90}{100} \times 100 = \text{Rs. } 90$$

$$\begin{aligned} \text{Extra money} &= \text{Rs. } (90 + 30) - \text{Rs. } (36 + 75) \\ &= \text{Rs. } 120 - \text{Rs. } 111 = \text{Rs. } 9 \end{aligned}$$

$$\% \text{ extra} = \frac{9}{111} \times 100 = 8.1\%$$

Hence, Sasha paid 8.1% extra price.

**QUANTITATIVE APTITUDE**

7. (c); Case 1: If Rate is Rs. 3.25  
 Total sales revenue =  $2000 \times 3.25 \times 0.75$   
 $= \text{Rs. } 4875$   
 [Here 1000 strips are given free of cost]  
 Profit = Total sales revenue - Rs. 4800  
 $= \text{Rs. } 4875 - \text{Rs. } 4800 = \text{Rs. } 75$

- Case 2: If rate is Rs. 4.25  
 Total sales revenue =  $3000 \times 4.25 \times 0.75$   
 $= \text{Rs. } 9562.5$  [Total 3000 strips]  
 Profit = Total sales revenue - Rs. 4800  
 $= \text{Rs. } 9562.5 - \text{Rs. } 4800 = \text{Rs. } 4762.5$   
 Hence, the ratio of profit is

$$\frac{\text{New profit}}{\text{Old profit}} = \frac{4762.5}{75} = 63.5$$

8. (d); Cost price = Rs. 240000 [Total 3000 copies]  
 Published price = Rs. 325 [Published price]

$$\text{Selling price} = \frac{75}{100} \times 325 = \text{Rs. } 243.75$$

$$\text{No. of free copies} = 500 + \frac{2500}{25} = 500 + 100 = 600$$

$$\text{So, total selling price} = 2400 \times 243.75 = \text{Rs. } 585000$$

$$\text{Hence, percentage gain} = \frac{585000 - 240000}{240000} \times 100$$

$$= \frac{345000}{240000} \times 100 = 143.75\%$$

Hence, the overall gain is 143.75%.

9. (a); There were 5 i-phones (2 + 3) and 20 i-pads.  
 Surbhi sells 2 i-phones for a profit of Rs. 2000 each. Hence, profit from i-phone sales = Rs. 4000  
 Then, profit from i-pads sales = Rs. 45000

$$\text{Thus, profit per i-pad} = \frac{45000}{15} = \text{Rs. } 3000$$

(Since, 15 i-pads were sold in all.)

Hence, CP of i-pad = Rs. 15000

CP of i-phone = Rs. 7500

$$\begin{aligned} \text{Total cost} &= \text{Rs. } 15000 \times 20 + \text{Rs. } 7500 \times 5 \\ &= \text{Rs. } 300000 + \text{Rs. } 37500 = \text{Rs. } 337500 \end{aligned}$$

[If only 75% of i-pads and 2 i-phones were sold]

$$\text{Total revenue} = \text{Rs. } 18000 \times 15 + \text{Rs. } 9500 \times 2$$

$$= \text{Rs. } 270000 + \text{Rs. } 19000 = \text{Rs. } 289000$$

Since, total revenue is less than total cost, there is a loss.

$$\text{Hence, loss} = \text{Rs. } 337500 - \text{Rs. } 289000 = \text{Rs. } 48500$$

Thus, Surbhi has an overall loss of Rs. 48500.

10. (b); In the given question, let the total profit% be p%

$$\Rightarrow \text{Total Profit p\%} = \frac{1}{5} \times 5 + \frac{1}{4} \times 10 +$$

$$\frac{1}{2} \times 12 + \left[ 1 - \left( \frac{1}{5} + \frac{1}{4} + \frac{1}{2} \right) \right] \times 16$$

## PROFIT AND LOSS

$$\Rightarrow 1 + \frac{5}{2} + 6 + \left( \frac{1}{20} \times 16 \right) \Rightarrow \frac{103}{10}\% \text{ loss}$$

Now if he would have sold whole wheat at 11%,  
he would had made Rs. 72.80 more

$$11\% - \frac{103}{10}\% = \text{Rs. } 72.80, \quad \frac{7}{10}\% = \text{Rs. } 72.80$$

$$1\% = \text{Rs. } \frac{72.80 \times 10}{7} \quad [\text{Unitary method}]$$

$$100\% = \text{Rs. } 10,400 \quad [\text{Total CP of } 4000 \text{ kg wheat}]$$

$$\text{CP of crop/kg} = \text{Rs. } \frac{10400}{4000} = \text{Rs. } 2.60$$

11. (d); Suppose selling price of both of them be Rs. P.

$$\text{CP of Ajit} = \text{Rs. } p \left[ \frac{100 - 25}{100} \right] = \text{Rs. } \frac{3}{4}p$$

(% Profit on SP)

$$\text{CP of Rohit} = \text{Rs. } p \left[ \frac{100}{100 + 25} \right] = \text{Rs. } \frac{4}{5}p$$

(% Profit on CP)

$$\text{So, Ajit profit} = \text{SP} - \text{CP} = p - \frac{3}{4}p = \text{Rs. } \frac{p}{4}$$

$$\text{Rohit profit} = \text{SP} - \text{CP} = p - \frac{4}{5}p = \text{Rs. } \frac{p}{5}$$

$$\text{Difference of profit} = \frac{p}{4} - \frac{p}{5} = \text{Rs. } 100 \text{ (given)}$$

$$= \frac{p}{20} = 100 \Rightarrow \text{SP} = p = \text{Rs. } 2000$$

12. (d); Let CP of pen be Rs. x

and SP be Rs. y

Initially at loss of 20%,

$$\Rightarrow \frac{20}{100} = \frac{x-y}{x} \Rightarrow \frac{1}{5}x = x - y$$

$$\Rightarrow y = \frac{4}{5}x \quad \dots(i)$$

Now if y would change to Rs. (y + 12), then profit becomes 30%

$$\Rightarrow \frac{30}{100} = \frac{y+12-x}{x} \Rightarrow \frac{3}{10} = \frac{\frac{4}{5}x + 12 - x}{x}$$

$$\Rightarrow x = \text{Rs. } 24 \quad \dots(ii)$$

$$y = \text{Rs. } \frac{96}{5} \text{ or Rs. } 19.2 \quad \dots(iii)$$

% profit now if y becomes Rs. (y + 4.8)

$$\Rightarrow \% \text{ profit} = \frac{\text{SP} - \text{CP}}{\text{CP}} \times 100$$

$$= \frac{\text{Rs. } (y + 4.8) - 24}{24} \times 100$$

$$= \frac{\text{Rs. } (19.2 + 4.8) - 24}{24} \times 100 = 0\%$$

13. (c); CP of i-phone to dealer

(on inclusion of 10% custom duty)

$$= \text{Rs. } (25000 + 10\% \text{ of } 25000) = \text{Rs. } 27500$$

The SP of i-phone at 20% profit

$$= \text{Rs. } \left[ 27500 \times \frac{120}{100} \right] = \text{Rs. } 33000$$

But Here, Rs. 33000 is price after 25% discount on MP

$$\text{Hence, } \text{MP} \times (1 - 0.25) = 33000$$

$$\text{MP} = \frac{33000}{0.75} = \text{Rs. } 44000$$

14. (a); Let CP of cab driver be price of petrol  
= Rs. 30 per liter

His, SP would be to carry 3 passengers

Let cost of 1 passenger be Rs. x

Initially he made profit of 20%

$$\Rightarrow \text{P\%} = \frac{20}{100} = \frac{\text{SP} - \text{CP}}{\text{CP}} = \frac{20}{100} = \frac{3x - 30}{30}$$

$$x = \text{Rs. } 12$$

Now, CP of petrol = Rs. 24 per litre

$$\text{SP} = 4 \text{ (cost of 1 passenger)} = \text{Rs. } 48$$

$$= \text{Profit\%} = \frac{48 - 24}{24} \times 100 = 100\%$$

15. (c); Let the labelled price of article be Rs y.

$$\text{CP of article} = y \left( \frac{100 - 12.5}{100} \right) = \text{Rs. } \frac{7}{8}y$$

$$\text{SP of article} = y \left( \frac{100 + 17.5}{100} \right) = \text{Rs. } \frac{117.5}{100}y \text{ or}$$

$$= \text{Rs. } \frac{47}{40}y$$

$$\text{Profit} = \text{Rs. } \left[ \frac{47}{40}y - \frac{7}{8}y \right] = \text{Rs. } \frac{12}{40}y$$

$$\% \text{ profit} = \frac{\frac{12}{40}y}{\frac{7}{8}y} \times 100 = \frac{12}{35} \times 100 = 34\frac{2}{7}\%$$

## PROFIT AND LOSS

16. (b); Let the labelled price of article be Rs. a

$$CP \text{ of article} = \text{Rs. } a \left( \frac{100 - 15}{100} \right)$$

$$= \text{Rs. } \left[ \frac{85}{100} \right] a \text{ or } \text{Rs. } \frac{17}{20} a$$

$$SP \text{ of article} = \text{Rs. } a \left( \frac{100 + 10}{100} \right)$$

$$= \text{Rs. } \left[ \frac{110}{100} \right] a \text{ or } \text{Rs. } \frac{11}{10} a$$

$$\text{Profit} = \text{Rs. } \left[ \frac{11}{10} a - \frac{17}{20} a \right] = \text{Rs. } \frac{5a}{20}$$

$$\% \text{ profit} = \frac{\frac{5a}{20}}{\frac{17a}{20}} \times 100 = \frac{5}{17} \times 100 = 29\frac{7}{17}\%$$

17. (c); Here, the labelled price of chair is

$$= \frac{SP \times 100}{(100 - D)\%} = \frac{2139 \times 100}{93} = \text{Rs. } 2300$$

Let the CP of chair be Rs. p

Now according to question:

$$\frac{15}{100} = \frac{2300 - p}{p} \Rightarrow 15p = 230000 - 100p$$

$$p = \text{Rs. } 2000$$

18. (c); Here, the labelled price of decks is defined as:

$$\Rightarrow \frac{SP \times 100}{(100 - D)\%} = \frac{166 \times 100}{100 - 17} = \text{Rs. } 200$$

Let CP of deck be p

According to the question:

$$\frac{25}{100} = \frac{200 - p}{p} \Rightarrow p = \text{Rs. } 160$$

19. (c); The original company price

$$= \text{Rs. } \left[ \frac{25000 \times 100}{100 - 15} \right] = \text{Rs. } \left[ \frac{25000 \times 100}{85} \right]$$

$$= \text{Rs. } 29,411.76$$

Let the total SP be Rs. p

Now according to question:

$$= \frac{p - 29411.76}{29411.76} \times 100 = 8 \Rightarrow p = \text{Rs. } 31,764.70$$

20. (a); The original company price =  $\text{Rs. } \left[ \frac{SP \times 100}{(100 - D)\%} \right]$

$$= \text{Rs. } \left[ \frac{860 \times 100}{(100 - 14)\%} \right] = \text{Rs. } 1000$$

Let the total SP be Rs. q

Now according to equation:

$$= \frac{SP - CP}{CP} \times 100 = (\text{profit})\%$$

$$\Rightarrow \frac{q - 1000}{1000} \times 100 = 6 \Rightarrow q = \text{Rs. } 1060$$

## Previous Year (Memory Based)

1. (a); Let the no. of pens be x.

The CP of pens is same in both transaction cases.

$$(CP)_1 = (CP)_2$$

$$(SP)_1 - \text{Profit} = (SP)_2 + \text{Loss} \quad \dots(i)$$

$$\text{Given } (SP)_1 = \text{Rs. } 2.5 \text{ (For 1 pen)}$$

$$= \text{Rs. } 2.5x \text{ (For } x \text{ pens)}$$

$$\text{Profit} = \text{Rs. } 110$$

$$\text{Similarly, } (SP)_2 = \text{Rs. } 1.75x$$

$$\text{Loss} = \text{Rs. } 55$$

Applying values in (i)

$$2.5x - 110 = 1.75x + 55$$

$$\text{On solving, } x = 220 \text{ pens.}$$

2. (e); Total CP of Computer set (including transportation and installation)

$$= \text{Rs. } (12500 + 300 + 800) = \text{Rs. } 13600$$

$$\text{Profit\%} \Rightarrow \frac{15}{100} = \frac{SP - 13600}{13600} \Rightarrow SP = \text{Rs. } 15640$$

3. (d); Total CP of mixture =  $\text{Rs. } [25 \times 32 + 15 \times 36]$

$$= \text{Rs. } [800 + 540] = \text{Rs. } 1340$$

$$CP \text{ of 1 kg mixture} = \text{Rs. } \left[ \frac{1340}{25 + 15} \right] = \text{Rs. } 33.5$$

SP of 1 kg mixture (given) =  $\text{Rs. } 40.20$

$$\text{Profit\%} = \frac{SP - CP}{CP} \times 100 = \frac{40.20 - 33.5}{33.5} \times 100 = 20\%$$

4. (d); Let the original price of watch be Rs. x

Now in earlier situation,

He gave discount of 15%

$$\text{So, selling price of watch} = \text{Rs. } x \left( \frac{100 - D\%}{100} \right)$$

$$= \text{Rs. } x \left( \frac{85}{100} \right)$$

Now if he would have given 20% discount,

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$$\text{Selling price of watch} = \text{Rs. } x \left( \frac{80}{100} \right)$$

According to question

$$\Rightarrow x \left( \frac{85}{100} \right) - x \left( \frac{80}{100} \right) = 51$$

$$\Rightarrow x = \frac{51 \times 100}{85 - 80} = \text{Rs. } 1020$$

5. (a); CP of 245 pieces of article =  $\text{Rs. } (245 \times 30)$   
 $= \text{Rs. } 7350$   
 Total CP (including transport and packing)  
 $= \text{Rs. } (7350 + 980 + 1470) = \text{Rs. } 9800$

$$\text{Hence, CP of 1 piece} = \frac{9800}{245} = \text{Rs. } 40$$

$$\text{SP of 1 piece} = \text{Rs. } 50$$

$$\text{Gain \%} = \frac{10}{40} \times 100 = 25\%$$

6. (a); Let the original price of article be  $\text{Rs. } 100$   
 After 5% discount, its SP =  $\text{Rs. } [100 - 5\% \text{ of } 100]$   
 $= \text{Rs. } 95$

$$= \text{For original price} = \text{Rs. } 100, \text{ SP} = \text{Rs. } 95  
 \text{Hence, for original price} = \text{Rs. } 504 \text{ (given)}$$

$$= \text{SP} = \frac{95}{100} \times 504 = \text{Rs. } 478.80$$

$$\text{Given, Profit \%} = 20\%$$

$$\frac{20}{100} = \frac{478.8 - \text{CP}}{\text{CP}} \Rightarrow \text{CP} = \text{Rs. } 399$$

7. (d); In this question, you don't need to solve in multiple steps to first find MP, then CP etc.  
 In such questions if we need to find profit % if no discount is given, then formula is:

$$\text{Profit \%} = \frac{(\text{Discount \%}) + (\text{Profit \% earlier})}{(100 - \text{Discount \%})} \times 100$$

$$= \frac{20 + 30}{100 - 20} \times 100 = 62.5\%$$

8. (b); CP of TV for Suresh (including transportation and installation)  
 $= \text{Rs. } [11250 + 150 + 800] = \text{Rs. } 12200$   
 Req. Selling price (if no discount given)

$$\Rightarrow \text{Rs. } \left[ 12200 \times \frac{115}{100} \right] = \text{Rs. } 14030$$

9. (d); We can determine CP (cost price)/purchase rate by below formula:

$$\text{CP} = \text{SP} \times \frac{100}{100 - \text{Discount \%}} \times \frac{100}{100 + \text{Profit \%}}$$

$$= 1242 \times \frac{100}{90} \times \frac{100}{115} = \text{Rs. } 1200$$

10. (c); (Loss \% on refrigerator) =  $\frac{12}{100} = \frac{10000 - \text{SP}}{10000}$

$$\text{SP of refrigerator} = \text{Rs. } 8800$$

$$(\text{Profit \% on phone}) = \frac{8}{100} = \frac{\text{SP} - 12000}{12000}$$

$$\text{SP of phone} = \text{Rs. } 12960$$

$$\text{Hence, Profit/Loss} = (\text{Total SP}) - (\text{Total CP})$$

$$= 12960 + 8800 - 12000 - 10000$$

$$= \text{Rs. } -240 \text{ (Loss of Rs. 240)}$$

11. (c); Total CP of 140 shirts and 250 trousers  
 $= \text{Rs. } (140 \times 450 + 250 \times 550)$   
 $= \text{Rs. } 200500$

$$\text{Total SP} = \frac{200500 \times 140}{100} = \text{Rs. } 280700$$

$$\text{Avg. SP} = \frac{280700}{390} = \text{Rs. } 720 \text{ (appx.)}$$

12. (c); Let CP be  $\text{Rs. } x$   
 Then MP (after marking 40% above CP) =  $\text{Rs. } 1.4x$   
 SP (after discount of 25%)  
 $= \text{Rs. } [1.4x] [1 - 0.25] \Rightarrow \text{Rs. } 1.05x$

$$\% \text{ Profit} = \text{Rs. } \left[ \frac{1.05x - x}{x} \right] \times 100\% = 5\%$$

13. (d); Here, net loss \% =  $\frac{a^2}{100} = 4\%$

$$\text{Loss \%} = \frac{4}{100} = \frac{\text{CP} - [4.5 \times 2 \text{ lakh}]}{\text{CP}}$$

$$= \text{CP} = \text{Rs. } 9,37,500$$

$$\text{Hence loss} = \text{CP} - \text{SP} \\ = 9,37,500 - 9,00,000 = \text{Rs. } 37500$$

14. (a); Let MP be  $\text{Rs. } 100$

$$\text{SP} = 80\% \text{ of MP} = \text{Rs. } 80$$

$$\text{CP (after 10\% loss)} = \frac{80 \times 100}{100 - 10} = \text{Rs. } \frac{800}{9}$$

$$\Rightarrow \text{Profit \%} = \frac{\text{Profit}}{\text{CP}} \times 100$$

$$= \frac{(95\% \text{ of MP}) - \text{CP}}{\text{CP}} \times 100 = \frac{95 - \frac{800}{9}}{\frac{800}{9}} \times 100 = 6.9\%$$

15. (c); Let CP of wrist watch be  $\text{Rs. } x$   
 Then CP of pendulum =  $\text{Rs. } (390 - x)$

$$\text{SP of wrist watch} = \frac{110x}{100} = \frac{11x}{10} \text{ Rs.}$$

$$\text{SP of pendulum} = \frac{115}{100} (390 - x)$$

**PROFIT AND LOSS**

$$= \frac{23}{20}(390 - x) = 448.5 - \frac{23}{20}x$$

$$\text{Total SP} = \frac{11x}{10} + 448.5 - \frac{23}{20}x = \frac{8970 - x}{20}$$

Total CP = Rs. 390

Net profit = Total SP - Total CP

$$51.50 = \frac{8970 - x}{20} - 390$$

$$1030 = 8970 - x - 7800 \Rightarrow x = 140$$

So, price of wrist watch = Rs. 140

price of pendulum = Rs. 250

difference between original prices

= Rs. (250 - 140) = Rs. 110

16. (a); Let CP of each book = Rs. 100  
So, CP of 16 books = Rs. 1600

$$\text{SP of 16 books} = \text{Rs. } 1600 \times \frac{135}{100} = \text{Rs. } 2160$$

$$\text{SP of 1 book} = \text{Rs. } \frac{2160}{16} = \text{Rs. } 135$$

$$96\% \text{ of MP} = \text{Rs. } 135, \text{ MP} = \text{Rs. } 140.625$$

So, MP is increased above the CP by  
40.625% ≈ 40%

17. (c); Cost Price of each furniture

(including packaging)

$$= \text{Rs. } \left[ 250 + \frac{2500}{150} \right] = \text{Rs. } \frac{800}{3}$$

Marked price (given) = Rs. 320

$$\text{SP (5% discount on MP)} = \text{Rs. } [320 - 16] = \text{Rs. } 304$$

$$\Rightarrow \% \text{ Profit} = \frac{\frac{800}{3} - 304}{\frac{800}{3}} \times 100 = 14\%$$

18. (d); Let the CP of ox be Rs. x

CP of carriage = Rs. (8000 - x)

SP of ox (after 10% profit) = Rs. 1.1x

SP of carriage (after 10% loss) = Rs. 0.9(8000 - x)

Given total profit = 2.5%

$$1.1x + 0.9(8000 - x) = 8000 \times 1.025$$

$$1.1x + 7200 - 0.9x = 8200$$

$$0.2x = 1000 \text{ or } x = \text{Rs. } 5000$$

19. (d); Discount % in initial cost of sugar = 5%

Now to keep Rs. 608 price constant,  
% increase in initial consumption

$$= \left( \frac{5}{100 - 5} \right) \times 100\% = \frac{100}{19}\%$$

Here,  $\frac{100}{19}\%$  is increase in consumption,

**QUANTITATIVE APTITUDE**

$$\text{So, } \left( \frac{100}{19}\% = 2\text{kg} \right)$$

So initial consumption i.e. (100%)  
=  $(19 \times 2) = 38 \text{ kg}$

Initial SP of Sugar = Rs.  $\frac{608}{38} = \text{Rs. } 16/\text{kg}$

20. (a); Here, Total discount on MP

$$= \left[ \frac{1}{2} \times 0 + \frac{1}{4} \times 20 + \frac{1}{4} \times 40 \right]\%$$

[where half is sold at MP, one-fourth 20%  
discount, one-fourth 40% discount]  
= 15%

Now, If CP (assume) = Rs. x

then MP = 20% above CP = Rs.  $1.2x$

MP after 15% discount = 85% of  $1.2x$  = Rs.  $1.02x$

$$\text{Gain \%} = \frac{1.02x - x}{x} \times 100 = 2\%$$

21. (d); Let us assume CP be Rs. 100

MP (after 25% above CP) = Rs. 125

$$\text{Discount} = 12\frac{1}{2}\% \text{ of } 125 = \text{Rs. } 15\frac{5}{8}$$

$$\text{Reduced price} = \text{Rs. } \left[ 125 - 15\frac{5}{8} \right] = \text{Rs. } 109\frac{3}{8}$$

$$\Rightarrow \% \text{ profit} = \frac{109\frac{3}{8} - 100}{100} \times 100 = 9\frac{3}{8}\%$$

22. (a); MP of goods (before 12.5% discount)

$$= \text{Rs. } 875 \left[ \frac{100}{100 - 12.5} \right] = \text{Rs. } 1000$$

$$\text{CP of goods} = \text{Rs. } 1000 \left( \frac{100}{100 + 25} \right) = \text{Rs. } 800$$

23. (b); In given question, 10% of tomato is spoiled  
Hence, CP of remaining 90% tomato

$$= \text{Rs. } 1500 \left( \frac{100}{90} \right)$$

Hence, SP per quintal of tomato if gain is 20%

$$1500 \times \frac{100}{90} \times \left( \frac{100 + 20}{100} \right) = \text{Rs. } 2000 \text{ per quintal}$$

24. (a); Let Aman pays Rs. y for a laptop

Rate of 5 laptops = Rs. 5y

Rate of 7 computers = Rs.  $(58500 - 5y)$

Total gain =  $(10\% \text{ of } 5 \text{ laptops} + 16\% \text{ of } 7 \text{ computer sets})$

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## PROFIT AND LOSS

$$\Rightarrow 7110 = \frac{10 \times 5y}{100} + \frac{16}{100}(58500 - 5y)$$

$$\Rightarrow 7110 = \frac{y}{2} + \frac{4}{25}(58500 - 5y)$$

$$y = \frac{22500}{3} = \text{Rs. } 7500 \text{ (cost of one laptop)}$$

25. (b); Here, reduction of 10% enables the person to get 25 kg more rice.  
So, saving of 10% on Rs. 2250 = Rs. 225  
At Rs. 225, person purchases 25 kg rice

$$\text{So, reduced price/kg} = \text{Rs. } \left( \frac{225}{25} \right) = \text{Rs. } 9$$

26. (a); Total CP of 26 kg wheat of one kind  
= Rs.  $[26 \times 20] = \text{Rs. } 520$   
Total CP of 30 kg another variety of wheat  
= Rs.  $[30 \times 36] = \text{Rs. } 1080$   
Total SP of 56 kg mixture =  $[56 \times 30] = \text{Rs. } 1680$

$$\Rightarrow \% \text{ profit} = \frac{1680 - (1080 + 520)}{1600} \times 100 = 5\%$$

27. (c); Here, B sold pen to C at 25% profit for Rs. 75

$$\text{Thus, (CP for B)} = \text{Rs. } \frac{75}{1.25} = \text{Rs. } 60$$

Now since A sold to B at 20% profit,  
A's cost price  $\times (1 + 0.2) = 60$

$$\text{A's cost price} = \frac{60}{1.2} = \text{Rs. } 50$$

28. (b); Let CP of pen for Seema be Rs. 100  
Seema 25% Sapna 10% Asha 5% Kavita  
(100) (125) (137.5) (144.375)  
Here, Asha sold her pen at Rs. 144.375 if Seema bought it at Rs. 100  
If Asha sold pen for Rs. 231, Seema bought it at

$$= \text{Rs. } \left[ \frac{100}{144.375} \times 231 \right] = \text{Rs. } 160$$

29. (d); Total CP of mixture  $(40 + 25 = 65)$  kg would be = Rs.  $(40 \times 12.5 + 25 \times 15.10) = \text{Rs. } 877.50$

$$= \text{CP of 1kg} = \text{Rs. } \left[ \frac{877.50}{65} \right] = \text{Rs. } 13.5$$

$$= \text{Gain\%} = \frac{10}{100} = \frac{\text{SP} - 13.5}{13.5}$$

- SP of 1 kg mixture = Rs. 14.85  
30. (b); CP of 20 articles = SP of 15 articles

$$\Rightarrow \frac{\text{CP of 1 article}}{\text{SP of 1 article}} = \frac{15}{20} = \frac{3}{4}$$

$$\text{Profit\%} = \frac{4 - 3}{3} \times 100 = 33.33\%$$

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