

## EXERCISE

1. If the manufacture gains 10%, the wholesale dealer 15% and the retailer 25%, then find the cost of production of a table, the retail price of which is ₹1265?
  - (a) ₹800
  - (b) ₹1000
  - (c) ₹900
  - (d) ₹600
2. The price of a jewel, passing through three hands, rises on the whole by 65%. If the first and the second sellers earned 20% and 25% profit respectively, find the percentage profit earned by the third seller.
  - (a) 20%
  - (b) 10%
  - (c) 25%
  - (d) No gain or loss
3. A man sold his book for ₹891, thereby gaining  $\frac{1}{10}$  of its cost price. Find his cost price.
  - (a) ₹850
  - (b) ₹810
  - (c) ₹851
  - (d) ₹840
4. A trader wants 10% profit on the selling price of a product whereas his expenses amount to 15% on sales. What should be his rate of mark up on an article costing ₹9?
  - (a) 20%
  - (b)  $66\frac{2}{3}\%$
  - (c) 30%
  - (d)  $\frac{100}{3}\%$
5. If 11 lichchus are bought for 10 paise and 10 lichchus are sold for 11 paise, the gain % is
  - (a) 10%
  - (b) 11%
  - (c) 20%
  - (d) 21%
6. A man sold 10 eggs for 5 rupees and gained 20%. How many eggs did he buy for 5 rupees?
  - (a) 10eggs
  - (b) 12 eggs
  - (c) 14 eggs
  - (d) 16 eggs
7. A person sells 36 oranges per rupee and suffers a loss of 4%. Find how many oranges per rupee to be sold to have a gain of 8%?
  - (a) 30
  - (b) 31
  - (c) 32
  - (d) 33
8. Coconuts were purchased at ₹ per hundred and sold at ₹2 per coconut. If 2000 coconuts were sold, what was the total profit made?
  - (a) ₹500
  - (b) ₹1000
  - (c) ₹1500
  - (d) ₹2000
9. A shopkeeper's price is 50% above the cost price. If he allows his customer a discount of 30% what profit does he make?
  - (a) 5%
  - (b) 10%
  - (c) 15%
  - (d) 20%
10. A shopkeeper purchases 10kg of rice at ₹600 and sells at a loss as much as the selling price of 2kg of rice. Find the sale rate of rice/kg.
  - (a) ₹60 per kg
  - (b) ₹50 per kg
  - (c) ₹80 per kg
  - (d) ₹70 per kg
11. A businessman allows a discount of 10% on the written price. How much above the cost price must he mark his goods to make a profit of 17%?
  - (a) 30%
  - (b) 20%
  - (c) 27%
  - (d) 18%
12. A man sold an article at a loss of 20%. If he sells the article for ₹12 more, he would have gained 10%. The cost price of the article is
  - (a) ₹60
  - (b) ₹40
  - (c) ₹30
  - (d) ₹22
13. A milk man makes a profit of 20% on the sale of milk. If he were to add 10% water to the milk, by what % would his profit increase?
  - (a) 30
  - (b)  $\frac{40}{3}$
  - (c) 22
  - (d) 10
14. A grocer purchased 80 kg of sugar at ₹13.50 per kg and mixed it with 120 kg sugar at ₹16 per kg. At what rate should he sell the mixture to gain 16%?
  - (a) ₹17 per kg
  - (b) ₹17.40 kg
  - (c) ₹16.5 kg
  - (d) ₹16 per kg

15. A dishonest fruit seller professes to sell his goods at the cost price but weights 800 grams for a kg weight. Find his gain percent.  
(a) 100% (b) 150%  
(c) 50% (d) 200%
16. A shopkeeper purchased 150 identical pieces of calculators at the rate of ₹250 each. He spent an amount of ₹2500 on transport and packing. He fixed the labelled price of each calculator at ₹320. However, he decided to give a discount of 5% on the labelled price. What is the percentage profit earned by him?  
(a) 14% (b) 15%  
(c) 16% (d) 20%
17. A dishonest dealer sells his goods at the cost price but still earns a profit of 25% by underweighing. What weight does he use for a kg?  
(a) 750g (b) 800g  
(c) 825g (d) 850g
18. A shopkeeper marks up his goods to gain 35%. But he allows 10% discount for cash payment. His profit on the cash transaction therefore, in percentage, is  
(a)  $13\frac{1}{2}$  (b) 25  
(c)  $21\frac{1}{2}$  (d)  $31\frac{1}{2}$
19. A man sold two steel chairs for ₹500 each. On one he gains 20% and on other, he loses 12%. How much does he gain or lose in the whole transaction?  
(a) 1.5% gain (b) 2% gain  
(c) 1.55% gain (d) 2% loss
20. A firm of readymade garments makes both men's and women's shirts. Its average profit is 6% of the sales. Its profit in men's shirts average 8% of the sales and women's shirts comprise 60% of the output. The average profit per sale rupee in women shirts is  
(a) 0.0466 (b) 0.0666  
(c) 0.0166 (d) None of these
21. A man purchases two watches at ₹560. He sells one at 15% profit and other at 10% loss. Then he neither gains nor loss. Find the cost price of each watch.  
(a) ₹224, ₹300 (b) ₹200, ₹300  
(c) ₹224, ₹336 (d) ₹200, ₹336
22. A man bought a horse and a carriage for ₹3000. He sold the horse at a gain of 20% and the carriage at a loss 10%, thereby gaining 2% on the whole. Find the cost of the horse.  
(a) ₹1000 (b) ₹1200  
(c) ₹1500 (d) ₹1700
23. Two electronic musical instruments were purchased for ₹8000. The first was sold at a profit of 40% and the second at loss of 40%, If the sale price was the same in both the cases, what was the cost price of two electronic musical instruments?  
(a) ₹2000, ₹5000 (b) ₹2200, ₹5500  
(c) ₹2400, ₹5000 (d) ₹2400, ₹5600
24. A man sells an article at a gain 15%. If he had bought it at 10% less and sold it for ₹4 less, he would have gained 25%. Find the cost price of the article.  
(a) ₹150 (b) ₹160  
(c) ₹170 (d) ₹180
25. A businessman, while selling 20 articles, loses the cost price of 5 articles. Had he purchased the 20 articles for 25% less and sold them for  $33\frac{1}{3}\%$  more than the original selling price, what is his gain?  
(a) 5% (b) 75%  
(c)  $33\frac{1}{3}\%$  (d) 45%
26. Five kg of butter was bought by a shopkeeper for ₹300. One kg becomes unsalable. He sells the remaining in such a way that on the whole he incurs a loss of 10%. At what price per kg was the butter sold?  
(a) ₹67.50 (b) ₹52.50  
(c) ₹60 (d) ₹72.50

27. A manufacturer sells a pair of glasses to a wholesale dealer at a profit of 18%. The wholesaler sells the same to a retailer at a profit of 20%. The retailer in turn sells them to a customer for ₹30.09, thereby earning a profit of 25%. The cost price for the manufacturer is  
(a) ₹15 (b) ₹16  
(c) ₹17 (d) ₹18
28. By selling 66 metres of cloth a person gains the cost price of 22 metres. Find the gain per cent.  
(a) 22% (b)  $22\frac{1}{2}\%$   
(c) 33% (d)  $33\frac{1}{3}\%$
29. A dairy man pays ₹6.40 per litres of milk. He adds water and sells the mixture at ₹8 per litres, there by making 37.5% profit. The proportion of water to milk received by the customer is:  
(a) 1:10 (b) 1:12  
(c) 1:15 (d) 1:20
30. A single discount equal to a discount series of 10% and 20% is  
(a) 25% (b) 28%  
(c) 30% (d) 35%
31. The list price of a watch is ₹160. A retailer bought the same watch ₹122.40. He got two successive discounts one at 10% and the other at a rate which was not legible. What is the second discount rate?  
(a) 12% (b) 14%  
(c) 15% (d) 18%
32. Instead of a meter scale cloth merchant uses a 120 cm scale while buying but use an 80 cm scale while selling the same cloth. If he offers a discount of 20 per cent of cash payment, what is his overall per cent profit?  
(a) 20% (b) 25%  
(c) 40% (d) 15%
33. A trader marks his good at such a price that he can deduct 15% for cash and yet make 20% profit. Find the marked price of an item which costs him ₹90:  
(a) ₹ $135\frac{11}{13}$  (b) ₹ $105\frac{3}{21}$   
(c) ₹ $127\frac{1}{17}$  (d) ₹ $95\frac{1}{21}$
34. A trader wants 10% profit on the selling price of a product whereas his expense amount to 15% on sales. What should be his rate of mark up on an article costing ₹9?  
(a) 20% (b)  $66\frac{2}{3}\%$   
(c) 30% (d)  $\frac{100}{3}\%$
35. A wholesaler sells 30 pens at the price of 27 pens to a retailer. The retailer sells the pens at their market price. The profit for the retailer is  
(a) 11% (b) 10%  
(c)  $11\frac{1}{9}\%$  (d)  $9\frac{1}{11}\%$
36. A discount of 16% on the marked price of a book enables a man to buy a pen which costs ₹80. How much did he pay for the book?  
(a) ₹420 (b) ₹450  
(c) ₹480 (d) ₹495
37. A shopkeeper fixes the marked price of an item 20% above the cost price. He allows his customers a discount and makes a profit of 8%. Find the rate of discount.  
(a) 8% (b) 9%  
(c) 10% (d) 11%
38. A chair originally costs ₹50. It was offered for sales at 108% of its cost. After a week, the price was 10% discounted and was sold. Find the sale price.  
(a) ₹46.80 (b) ₹48.60  
(c) ₹50 (d) ₹52.40
39. By selling an umbrella for ₹30, a merchant gains 20%. During a clearance sale, the merchant allows a discount of 10% off the marked price (the price at which he used to sell). Find his again per cent.  
(a) 6% (b) 7%  
(c) 8% (d) 9%

40. By what % must the cost of goods be marked up so that even after a discount of 20% the same amount is realised as before the discount?  
(a) 20 (b) 25  
(c) 40 (d) 10
41. Goods are sold so that when a discount of 4 percent is given on the sale price, a profit of 20 percent is made. How much percent, is the sale price higher than the cost price?  
(a) 20% (b) 24%  
(c) 25% (d) 27%
42. A man sells his car for ₹ 5000 and loses something. Had he sold it for ₹ 5600, his gain would have been double the former loss. Find the cost price.  
(a) ₹ 5500 (b) ₹ 5100  
(c) ₹ 5400 (d) ₹ 5200
43. A manufacturer sells goods to an agent at a profit of 20%. The agent's wholesale price to a shopkeeper is at a profit of 10% and the shopkeeper retails his goods at a profit of 12%. Find the retailer's price of an article which had cost the manufacturer ₹ 25  
(a) ₹ 37 (b) ₹ 40  
(c) ₹ 44 (d) ₹ 46
44. A business man sells goods to an agent at a profit of 20%. The agent's wholesale price to a shopkeeper is at a profit of 10% and the shopkeeper retails his goods at a profit of 12%. Find the retailer's price of an article which had cost the manufacturer ₹ 25.  
(a) ₹ 2450 (b) ₹ 2225  
(c) ₹ 2000 (d) ₹ 1880
45. A sells an article which costs him ₹ 400 to B at a profit, of 20%. B then sells it to C, making a profit of 10% on the price he paid to A. How much does C pay to B.  
(a) ₹ 472 (b) ₹ 476  
(c) ₹ 528 (d) ₹ 532
46. A shopkeeper buys 50 dozen eggs at ₹ 4 per dozen. Out of them, 40 eggs were found broken. At what rate should he sell the remaining eggs per dozen so as to gain 5% on the whole?  
(a) ₹ 4 (b) ₹ 4.25  
(c) ₹ 4.50 (d) ₹ 5.25
47. A person sells his table at a profit of  $12\frac{1}{2}\%$  and the other had if he sells the table at a loss of  $8\frac{1}{3}\%$  but on the whole he gains ₹ 25. On the other hand if he sells the table at a loss of  $8\frac{1}{3}\%$  and the chair at a profit of  $12\frac{1}{2}\%$  then he neither gains nor loses. Find the cost price of the table.  
(a) ₹ 120 (b) ₹ 360  
(c) ₹ 240 (d) ₹ 230
48. Kabir buys an article with 25% discount on its marked price. He makes a profit of 10% by selling it at ₹ 660. The marked price is  
(a) ₹ 600 (b) ₹ 685  
(c) ₹ 700 (d) ₹ 800
49. On the eve of Gandhi Jayanti, Gandhi Ashram declared a 25% discount on silk. If selling price of a silk saree is ₹ 525, what is its marked price?  
(a) ₹ 700 (b) ₹ 725  
(c) ₹ 750 (d) ₹ 775
50. A shopkeeper marks an article at a price which gives a profit of 25%. After allowing certain discount, the profit reduces to  $12\frac{1}{2}\%$ . The discount percent is  
(a) 12% (b) 12.5%  
(c) 10% (d) 20%
51. ACD was sold at a profit of  $12\frac{1}{2}\%$ . If it had been sold at a profit of 15%, it would have

- gained him ₹10 more. the cost prices of CD is (in ₹)
- (a) 450 (b) 500  
(c) 400 (d) 550
52. A trader has a weighing balance that shows, 1, 200 gm for a kilogram. He further marks up his cost by 10%. Then the net profit percentage is  
(a) 32% (b) 23%  
(c) 31.75% (d) 23.5%
53. A shopkeeper allows 10% discount on goods when he sells without credit. Cost price of his goods is 80% of his selling price. If he sell his goods by cash, then his profit is  
(a) 50% (b) 70%  
(c) 25% (d) 40%
54. A dealer of scientific instruments allows 20% discount on the marked price of the instruments and still makes a profit of 25%. If his gain over the sale of an instrument is ₹150, find the marked price of the instrument.  
(a) ₹38.50 (b) ₹40  
(c) ₹38 (d) ₹37.50
55. Ram bought a T.V. with 20% discount on the labelled price. Had he bought it with 30% discount he would have saved ₹800. The value of the T.V. set that he bought is  
(a) ₹5,000 (b) ₹8,000  
(c) ₹9,000 (d) ₹10,000
56. A sold an article to B at 20% profit and B sold it to C at 15% loss. If A Sold it to C at selling price of B, then A would make.  
(a) 5% profit (b) 2% profit  
(c) 2% profit (d) 5% loss
57. A trader ho marks his goods up to 50% offered a discount of 20%. What % profit the trader makes after offering the payment?  
(a) 30% (b) 70%  
(c) 20% (d) 50%
58. A retailer buys a sewing machine at a discount of 15% and sells it for ₹1955. Thus he makes a profit of 15%. The discount is  
(a) ₹270 (b) ₹290  
(c) ₹300 (d) ₹310
59. A tea-merchant professes to sell tea at cost price but uses a false weight of 900 gram for a kilogram. The profit percent in his transaction is  
(a)  $11\frac{1}{9}\%$  (b) 10%  
(c)  $9\frac{1}{11}\%$  (d) 15%
60. Mahesh earned a profit of 20% by selling 60 apples at the rate of 42.50 for 5 apples. Then the total cost, at which the apples were bought is  
(a) ₹452 (b) ₹425  
(c) ₹450 (d) ₹485

ANSWER KEY			
1	(a)	31	(c)
2	(b)	32	(a)
3	(d)	33	(c)
4	(d)	34	(d)
5	(d)	35	(c)
6	(b)	36	(a)
7	(c)	37	(c)
8	(b)	38	(b)
9	(a)	39	(c)
10	(b)	40	(b)
11	(a)	41	(c)
12	(b)	42	(d)
13	(b)	43	(a)

14	(b)	44	(c)
15	(a)	45	(c)
16	(a)	46	(c)
17	(b)	47	(b)
18	(c)	48	(d)
19	(a)	49	(a)
20	(a)	50	(c)
21	(c)	51	(c)
22	(b)	52	(a)
23	(d)	53	(c)
24	(b)	54	(a)
25	(c)	55	(b)
26	(a)	56	(b)
27	(c)	57	(c)
28	(d)	58	(c)
29	(a)	59	(a)
30	(b)	60	(b)

## HINTS & EXPLANATIONS

1. (a) Let the cost of production of the table be `x.

Then, 125% of 115% of 110% of x = 1265

$$\Rightarrow \frac{125}{100} \times \frac{115}{100} \times \frac{110}{100} \times x = 1265$$

$$\Rightarrow \frac{253}{160} x = 1265 \Rightarrow x = \left( \frac{1265 \times 160}{253} \right) = \text{₹}800$$

2. (b) Let the original price of the jewel be `P and let the profit earned by the third seller be x%.

Then, (100+x) % of 125% of 120% of P = 165% of P

$$\Rightarrow \left[ \frac{(100+x)}{100} \times \frac{125}{100} \times \frac{120}{100} \times P \right] = \left( \frac{165}{100} \times P \right)$$

$$\Rightarrow (100 + x) = \left( \frac{165 \times 100 \times 100}{125 \times 120} \right) = 110 \Rightarrow x = 10\%$$

3. (b) Let C.P. = `x then profit = S.P. - C.P.

$$\Rightarrow \frac{1}{10} \times x = 891 - x \Rightarrow \frac{11x}{10} = 891$$

$$\Rightarrow x = \frac{891 \times 10}{11} = \text{₹}810$$

4. (d) Let the Sp of the article be `x

Expenses = 15% of x = `0.15x

Profit = 10% of x = `0.10x

CP = `9 (given)

Therefore, 9 + 0.15x + 0.1x = x  $\Rightarrow$  x = 12

$\therefore$  % increase for marked price =  $\frac{12-9}{9} \times 100$

$$= \frac{100}{3} \%$$

5. (d) C.P. for 1 lichchus =  $\frac{10}{11}$  paise

S.P. for 1 lichchus =  $\frac{11}{10}$  paise

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

Quantity      Price

$$\begin{array}{r} 11 \quad \times \quad 10 \\ 10 \quad \times \quad 11 \end{array}$$

$$\text{gain \%} = \left( \frac{11 \times 11}{10 \times 10} - 1 \right) \times 100\%$$

$$= \left( \frac{21}{100} \times 100 \right) \%$$

$$= 21\%$$

6. (b) S.P. for 1 egg =  $\frac{5}{10} = \text{Rs } \frac{1}{2}$

$$\therefore \text{C.P. for 1 egg} = \frac{100}{(100+20)} \times \frac{1}{2} = \frac{5}{12}$$

$\Rightarrow$  He bought 12 eggs for 5 rupees.

7. (c) Let he sells x oranges per rupee.

$$\frac{1}{36} : (100 - 4) :: x : (10 + 8)$$

$$\Rightarrow x = \frac{108}{96 \times 36} = \frac{1}{32}$$



8. He sells 32 oranges per rupee.  
 (b) C.P for one coconut = Rs  $\frac{150}{100} = Rs \frac{3}{2}$   
 S.P for one coconut = `2  
 Profit on one coconut =  $2 - \frac{3}{2} = \frac{1}{2}$   
 $\therefore$  Profit on 2000 coconut =  $\frac{1}{2} \times 2000 = `1000$

9. (a) Let C.P. = Rs 100, then M.P. = `150  
 S.P. = 70% of 150 = `105  
 $\therefore$  % profit =  $\frac{105-100}{100} \times 100 = 5\%$

10. (b) Let S.P. = `x per kg  
 $\therefore$  S.P. of 2 kg of rice = `2x = loss  
 now, Loss = C.P. - S.P.  
 $2x = 600 - 10x$   
 $\Rightarrow x = `50$  per kg

11. (a) Let CP = `100  
 Then, S.P. = `117  
 Let marked price be Rs. x.  
 Then, 90% of x = 117  $\Rightarrow x = \left(\frac{117 \times 100}{90}\right) = 130$   
 $\therefore$  Marked price = 30% above C.P.

12. (b) S.P. = C.P.  $\left(\frac{80}{100}\right) \Rightarrow S.P. = \frac{4}{5} C.P.$  ...  
 (1)  
 $S.P. + 12 = C.P. \left(\frac{110}{100}\right) \Rightarrow S.P. = \frac{11}{10} C.P. - 12$  ...  
 (2)  
 From eqn. (1) and (2)  
 $\frac{4}{5} C.P. = \frac{11}{10} C.P. - 12$   
 $\Rightarrow \frac{11}{10} C.P. - \frac{4}{5} = 12 \Rightarrow C.P. = ₹40$

13. (b) Let profit per litre = `20  
 So, C.P./litre = `100  
 S.P. /litre = `120  
 On adding 10% water to the milk  
 C.P. per  $\frac{9}{10}$  litre = `100  
 S.P. per  $\frac{9}{10}$  litre = `100  
 S.P. per litre =  $\frac{120 \times 10}{9} = \frac{400}{3}$

$\Rightarrow$  Profit /litre =  $\frac{400}{3} - 100 = \frac{100}{3}$   
 % by which profit increase =  $\frac{100}{3} - 20 = \frac{40}{3}$

14. (b) C.P. of 200 kg of mixture =  
 $(80 \times 13.50 + 120 \times 16)$   
 = `3000.

S.P. = 116% of Rs 3000 =  $\left(\frac{116}{100} \times 3000\right)$   
 = `3480

$\therefore$  Rate of S.P. of the mixture = Rs  $\left(\frac{3480}{200}\right)$  per kg  
 = `17.40 kg

15. (a) He gives 800 grams but charges the price of 1000 grams (1 kg)  
 $\Rightarrow$  on every 800 grams, he gains (1000-800) grams i.e. 200 grams.  
 $\therefore$  His gain % =  $\frac{200}{800} \times 100\% = 25\%$

Short cut:

$$\text{Gain \%} = \frac{\text{error}}{\text{true weight} - \text{error}}$$

$$= \frac{200}{1000 - 200} \times 100 = 25\%$$

16. C.P. of 150 calculators  
 =  $150 \times 250 + 2500 = 37500 + 2500 = `40000$   
 Labelled price of 150 calculators  
 =  $150 \times 320 = `48000$   
 Discount allowed = 5%  
 $\therefore$  S.P. of 150 calculators  
 =  $48000 - 5\% \text{ of } 48000 = `45600$

$\therefore$  Profit % =  $\frac{5600}{40000} \times 100 = 14$

17. (b)  $\frac{\text{True weight}}{\text{False weight}} = \frac{100 + \text{gain \%}}{100 + x}$   
 Here S.P. = C.P.  $\therefore x = 0$   
 $\Rightarrow$  False weight =  $\frac{1000 \times 100}{125} = 800 \text{ gm}$

18. Let cost price = `100  
 $\therefore$  Marked price = `135  
 After discount, selling price =  $135 - 13.5 = 121.5$   
 $\therefore$  profit % =  $121.5 - 100 = 21.5\%$

19. (a) S.P. of the 1st chair = `500  
 Gain = 20%

$$\therefore \text{C.P. of the 1st chair} = \frac{500 \times 100}{100 + 20} = \frac{500 \times 100}{120}$$

$$= \frac{1250}{3}$$

$$\text{S.P. of the 2nd chair} = \frac{500 \times 100}{100 - 12} = \frac{500 \times 100}{88}$$

$$= \text{`} 500 \text{ Loss} = 12\%$$

$$\frac{500 \times 25}{22} = \frac{250 \times 25}{11}$$

$$= \frac{6250}{11}$$

$$\text{Now S.P. of both the chairs} = \text{`} 1000$$

C.P. of both the chairs

$$= \frac{1250}{3} + \frac{6250}{11} = \frac{13750 + 18750}{33} = \frac{32500}{33}$$

$$\therefore \text{Net gain} = 1000 - \frac{32500}{33} = \frac{500}{33}$$

$$\Rightarrow \text{Gain \%} = \frac{500/33}{32500/33} \times 100 = \frac{500}{32500} \times 100$$

$$= \frac{100}{65} = \frac{20}{13} = 1.5\% \text{ (To one place of decimal)}$$

Shortcut Method:

$$\frac{100(x+y)+2xy}{(100+x)+(100+y)} = \frac{100(20-12)+2 \times 20 \times (-12)}{(100+20)+(100-12)}$$

$$= \frac{100 \times 8 - 480}{208} = \frac{320}{208} = 1.5\% \text{ gain}$$

20. (a) Women's shirt comprise 60% of the output.

$\therefore$  Men's shirts comprise  $(100-60) = 40\%$  of the output.

$\therefore$  Average profit from men's shirt = 8% of 40 = 3.2 out of 40. Over all avg. profit = 6 out of 100  $\therefore$  Average from womens shirt = 2.8 Out of 60

i.e. 0.0466 out of each shirt.

21. (c) Here, in whole transaction, there is neither gains nor loss, therefore,

Amount of gain in one watch = Amount of loss in other watch

$$\Rightarrow 0.15 \times \text{CP}_1 = 0.10 \times \text{CP}_2$$

$$\Rightarrow \frac{\text{CP}_1}{\text{CP}_2} = \frac{0.10}{0.15} = \frac{2}{3}$$

$$\text{Also } \text{CP}_1 + \text{CP}_2 = 560$$

$$\therefore \text{CP}_1 = \frac{2}{(2+3)} \times 560 = \text{`} 224$$

$$\text{and } \text{CP}_2 = 560 - 224 = \text{`} 336$$

22. (b) Let the C.P. of horse = `x

Then the C.P. of carriage = Rs  $(3000-x)$

$$20\% \text{ of } x - 10\% \text{ of } (3000-x) = 2\% \text{ of } 3000$$

$$\Rightarrow \frac{x}{5} - \frac{(3000-x)}{10} = 60$$

$$\Rightarrow 2x - 3000 + x = 600$$

$$\Rightarrow 3x = 3600 \Rightarrow x = 1200$$

23. (d) Here,  $\text{SP}_1 = \text{SP}_2$

$$\Rightarrow 140 \text{CP}_1 = 60 \text{CP}_2 \Rightarrow \frac{\text{CP}_1}{\text{CP}_2} = \frac{6}{14} = \frac{3}{7}$$

$$\therefore \text{CP}_1 = \frac{3}{(3+7)} \times 8000 = \text{`} 2400$$

$$\text{and } \text{CP}_2 = 8000 - 2400 = \text{`} 5600$$

24. (b) Let the C.P. be Rs 100

First S.P. = `115

Second C.P = 90..... Second s.p = 125% of

90 = `112.50 Difference of two selling prices

is `115 - Rs 112.50 = 2.50 and c.p of the

article is `100. But actual difference is Rs.4

$$\therefore \text{C.P} = 100/2.50 \times .4 = \text{`} 160$$

25. (c) Let the price of 1 article = `1

$$\Rightarrow \text{Loss} = 20 \text{ C.P.} - 20 \text{ S.P.}$$

$$\Rightarrow 5 \text{C.P.} = 20 \text{ C.P.} - 20 \text{ S.P.} \Rightarrow 20 \text{ S.P.} = 15 \text{ C.P.}$$

$$\Rightarrow \text{CP}_1 \text{ of 20 articles} = \text{`} 20$$

$$\Rightarrow \text{SP}_1 \text{ of 20 articles} = \text{`} 15$$

Also given that, had he purchased the 20 articles for 25% less and sold them for  $33\frac{1}{3}\%$  more, then

$$\Rightarrow \text{CP}_2 \text{ of 20 articles} = \text{`} 15$$

$$\Rightarrow \text{CP}_2 \text{ of 20 articles} = \text{`} 20$$

$$\therefore \text{Gain percentage} = \frac{20-15}{15} \times 100 = 33\frac{1}{3}\%$$

26. (a) Let S.P. = `x per kg

$$\therefore \text{S.P. of 4 kg} = \text{`} 4x$$

$$\therefore 4x = \frac{100-10}{100} \times 300$$

$$\Rightarrow x = \frac{270}{4} = \text{`} 67.50$$

27. (c) Let the cost price of manufactures is =P



$$\text{Selling price of manufacturer} = P + P \times \frac{18}{100} = \frac{59P}{50}$$

$$\begin{aligned} \text{Wholesaler selling price} &= \frac{59P}{50} + \frac{59P}{50} \times \frac{20}{100} \\ &= \frac{59P}{50} + \frac{59P}{250} = \frac{354P}{250} \end{aligned}$$

$$\begin{aligned} \text{Retailer selling price} &= \frac{354P}{250} + \frac{354P}{250} \times \frac{25}{100} \\ &= \frac{354P}{250} + \frac{177P}{500} = \frac{805P}{500} \end{aligned}$$

$$\begin{aligned} \text{Now, } \frac{805P}{500} &= 30.09 \\ \Rightarrow P &= 17 \end{aligned}$$

$$\text{Short } P = \left( \frac{100}{118} \times \frac{100}{120} \times \frac{100}{125} \times 30.09 \right) = 17$$

28. (d) Let C.P. of one metre of cloth = ` 1

then C.P. of 66 metres of cloth = ` 66

Gain = C.P. of 22 metres = ` 22

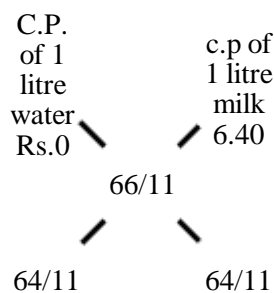
$$\% \text{ gain} = \frac{22}{66} \times 100 = 33\frac{1}{3}\%$$

Shortcut method:

If on selling 'x' articles, a man gains equal to the C.P. of 'y' articles, then  $\% \text{ gain} = \frac{y}{x} \times 100$

$$\therefore \% \text{ gain} = \frac{22}{66} \times 100 = 33\frac{1}{3}\%$$

29. (a) Mean cost price = `  $\left( \frac{100}{137.5} \times 8 \right) = \text{₹ } \frac{64}{11}$  using allegation rule.



$$\text{Required ration} = \frac{64}{110} = \frac{64}{11} = 1 : 10$$

30. (b) Equivalent discount =  $10 + 20 - \frac{10 \times 20}{100}$   
= 30 - 2 = 28%

31. (c) Retailer price = list price  $\left( 1 - \frac{d_1}{100} \right) \left( 1 - \frac{d_2}{100} \right)$   
= 2100

$$\Rightarrow 122.40 = 160 \left( 1 - \frac{10}{100} \right) \left( 1 - \frac{d_2}{100} \right)$$

$$\Rightarrow 1 - \frac{d_2}{100} = \frac{122.40 \times 100}{160 \times 90} = 0.85$$

$$\Rightarrow d_2 = (1 - 0.85) \times 100 = 15\%$$

32. (a) Let the cost of cloth per cm be ` x

As he uses 120 cm scale. so he has 120 cm cloth cost incurred = 100x. While selling he uses 80 cm scale, so actually he charges for  $\frac{100}{80} \times 20 = 150$  cm of cloth

Amount obtained after 20% discount =  $0.8x \times 150 = 120x$

$$\therefore \text{Profit} = \frac{20x}{100x} \times 100 = 20\%$$

33. (c) SP =  $90 \times 1.2 = \text{Rs } 108$

$$\text{Marked price} = \frac{108}{0.85} = \text{₹ } 127.05$$

34. (d) Let the SP of the article be ` x

Expenses = 15% of x = ` 0.15x

Profit = 10% of x = Rs 0.10x

CP = ` 9 (given)

Therefore,  $9 + 0.15x + 0.1x = x \Rightarrow x = 12$

$$\therefore \% \text{ increase for marked price} = \frac{12-9}{9} \times 100 = \frac{100}{3}\%$$

35. (c) Retailer's S.P. = M.P.

Retailer's C.P. for 30 Pens = M.P. of 27 pens

$\therefore$  Retailer's S.P. for 30 pens = M.P. of 30 pens

$$\therefore \% \text{ gain} = \frac{30-27}{27} \times 100 = \frac{100}{9} = 11\frac{1}{9}\%$$

36. (a) Let M.P. = ` 100

then discount = ` 16

$\therefore$  when discount = ` 80, then M.P. = ` x

Now,  $\downarrow \frac{100}{16} \quad x \quad \downarrow$  it's direct proportion

$$\therefore 100 : x :: 16 : 80$$

$$\Rightarrow 16x = 100 \times 80 \Rightarrow x = \text{₹ } 500$$

Now, since M.P. = ` 500, therefore, after 16% discount

$$\text{man paid} = 500 \left( 1 - \frac{16}{100} \right) = \text{₹ } 420$$

37. (c) Let C.P. = ₹100. Then M.P. = ₹120 and S.P. = ₹108  
 $\% \text{ discount} = \left(\frac{12}{120} \times 100\right)\% = 10\%$
38. (b) Offering price =  $\frac{50 \times 108}{100} = ₹54$   
 After 10% discount, S.P. = 90% of 54  
 $= \frac{90 \times 54}{100} = ₹48.60$
39. (c)  $(100 + g_1):S_1 :: (100 + g_2):S_2$   
 $(100 + 20):30 :: (100 + g_2):30 \left(1 - \frac{10}{100}\right)$   
 [ $\because$  10% discount is allowed on S.P.]  
 $120:30 :: (100 + g_2):27$   
 $100 + g_2 = \frac{120 \times 27}{30} = 108$   
 $\Rightarrow g_2 = 8\%$
40. (b) Let C.P. = Rs 100, Also, let M.P. = ₹x  
 Given, C.P. after 20% discount on M.P. = C.P.  
 $\Rightarrow 80\% \text{ of } x = 100$   
 $\Rightarrow x = \frac{100 \times 100}{80} = ₹125$
41. (c) Let the C.P. be Rs. 100  
 S.P. = Rs 120  
 Discount being 4%, S.P. is 96% of sale price  
 $\therefore 96\% \text{ of sale price} = ₹120$   
 $\Rightarrow$  Sale price is 25% higher than the C.P.
42. (d) Let his loss = ₹x. Then,  
 C.P. = 5000 + x = 5600 - 2x  
 $\Rightarrow 3x = 600 \Rightarrow x = 200$   
 $\therefore$  C.P. = 5000 + 200 = Rs 5200
43. (a) Retailer's price = 112% of 110% of (120% of 25)  
 $= \frac{112}{100} \times \frac{110}{100} \times \frac{120}{100} \times 25 = ₹36.96 \approx ₹37$
44. (c) Let C.P. = ₹x.  
 120% of  $\left(\frac{225}{2}\% \text{ of } x\right) = 2700$   
 $\Rightarrow \frac{120}{100} \times \frac{225}{2 \times 100} \times x = 2700 \Rightarrow x = 2000$
45. (c) C.P for B = 120% of ₹400 =  $\left(\frac{120}{100} \times 400\right)$   
 $= ₹480$

C.P for C = 110% of ₹480 =  $\left(\frac{110}{100} \times 480\right)$   
 $= ₹528.$

46. (c) C.P. = 50 × 4 = ₹200  
 Remaining eggs = 600 - 40 = 560  
 Let S.P. of eggs = ₹x per dozen  
 $\therefore$  Total S.P. =  $\frac{560}{12}x$   
 $\therefore \frac{560}{12}x = \frac{(100+5)\%}{100} \times 200$   
 $\Rightarrow x = \frac{105}{100} \times \frac{2400}{560} = ₹4.5 \text{ per dozen}$
47. (b) Suppose the cost price of table = ₹T and  
 cost price of a chair = ₹C.  
 Then;  $12\frac{1}{2}\%$  of T +  $\left(-8\frac{1}{3}\%\right)$  of C = 25 and  
 $\left(-8\frac{1}{3}\%\right)$  of T +  $12\frac{1}{2}\%$  of C = 0  
 or,  $\frac{25}{2}T - \frac{25}{3}C = 2500$  ..... (1)  
 $-\frac{25}{3}T + \frac{25}{3}C = 0$  ..... (2)  
 (1)  $\div$  2  $\div$  (2) 3 gives  $\frac{25}{4}T - \frac{25}{9}T = 1250$   
 or, T  $\left[\frac{225-100}{36}\right] = 1250$   
 $\therefore T = 360 \therefore$  price of a table = ₹360
48. (d) Let the marked price be ₹x.  
 $\therefore$  C.P. = (x - 25% of x) =  $\frac{3}{4}x$   
 $\Rightarrow$  S.P. =  $\left(\frac{3x}{4} + 10\% \text{ of } \frac{3x}{4}\right) = \frac{33}{40}x$   
 But,  $\frac{33}{40}x = 660 \Rightarrow x = 800.$
49. (a) Let the marked price be ₹x.  
 $\therefore$  S.P. = (x - 25% of x) =  $\frac{3}{4}x$   
 But, S.P = ₹525  
 $\therefore \frac{3}{4}x = 525 \Rightarrow x = 700$
50. (c) Shortcut method:  
 Net profit = profit + Discount +  $\frac{\text{Profit} \times \text{Discount}}{100}$   
 $\frac{25}{2} = 25 - \text{Discount} - \frac{25 \times \text{Discount}}{100}$   
 ('-' to represent discount)  
 $\frac{25}{2} - 25 = \frac{-5}{4} \text{ Discount}$   
 $\therefore$  Discount % = 10%

51. (c) 1<sup>st</sup> case:  

$$S.P. = \frac{100 + \text{Profit \%}}{100} \times C.P. \Rightarrow S.P. = \frac{100 + \frac{25}{2} \times C.P.}{100}$$

$$\Rightarrow S.P. = \frac{112.5}{100} C.P. \quad \dots (1)$$

Ind case:

$$S.P. = \frac{100 + \text{Profit \%}}{100} \times C.P. \Rightarrow (S.P. + 10)$$

$$= \frac{100 + 15}{100} \times C.P.$$

$$\Rightarrow (S.P. + 10) = \frac{115}{100} C.P. \quad \dots (2)$$

$$\frac{S.P.}{S.P. + 10} = \frac{112.5}{100} (C.P.) \times \frac{100}{115(C.P.)}$$

$$S.P. = \left(\frac{112.5}{150}\right) (S.P. + 10)$$

$$115 S.P. = 112.5 S.P. + 1125$$

$$S.P. = 450$$

$$\therefore C.P. = \frac{S.P. \times 100}{112.5} = \frac{450 \times 100}{112.5} = 400$$

52. (a) The trader professes to sell 1200 kg but sells only 1000 kg.

So profit = 20%

Markup = 10%

$$\text{Total profit} = 10 + 20 + \frac{10 \times 20}{100} = 32\%$$

53. (c) Let marked price of goods be `100.

$$\text{Selling price goods} = 100 - \frac{10}{100} \times 100 = `90$$

Cost price of goods is 80% of its selling price

$$C.P. = \frac{80}{100} \times 90 = 72$$

$$\text{Profit on goods} = (90 - 72) = `18$$

54. (a) Let marked price of the instruments be `x

$$\text{Selling price, S.P.} = x - \frac{20}{100}x = 0.8x$$

$$\text{Cost price, C.P.} = C.P. + \frac{25}{100} C.P. = 0.8x$$

$$C.P. = \frac{0.8 \times 100}{125} = \frac{16}{25}x$$

$$x = \frac{25}{16} C.P.$$

$$\text{Given that } \frac{25}{100} C.P. = 150$$

$$\Rightarrow C.P. = \frac{150 \times 100}{25} = 600$$

$$\text{Marked price } x = \frac{25}{16} \times 6,000 = `938.50$$

55. (b) Let labelled price of T.V. be `x

$$\text{Price after 20% discount, } x - \frac{20}{100}x = 0.8x$$

$$\text{Price after 30% discount, } x - \frac{30}{100}x = 0.7x$$

According to question

$$0.8x - 0.7x = 800$$

$$x = 800 \times 10 = 8000$$

56. (b) Let `100 be the cost price for A.

$$\text{S.P. for A} = 100 + 20\% \text{ of } 100 = 120$$

$$\text{S.P. for B} = 120 - 15\% \text{ of } 120 = 102$$

$$\text{Profit \%} = \frac{102 - 100}{100} \times 100 = 2\%$$

57. (c) Let cost price of good be 100

Trades mark up at 50% more i.e. 150

$$\text{Selling price of goods} = 150 - \frac{20}{100} \times 150 = 120$$

$$\text{Profit \%} = \frac{120 - 100}{100} \times 100 = 20\%$$

58. (c) Let original price of sewing machine be `x

$$\text{Retailer sought it at } x - \frac{15}{100}x = 0.85x$$

$$0.85x + \frac{15}{100} \times 0.85x = 1955$$

$$1.15 \times 0.85x = 1955$$

$$x = \frac{1955 \times 10000}{115 \times 85} = 2000$$

$$\text{Discount is } \frac{15}{100} \times 200 = `300$$

59. (a) Profit % =  $\frac{1000 - 900}{900} \times 100 = 11\frac{1}{9}\%$

60. (b) Selling price of 5 apples = `42.50

$$\text{Selling price of 60 apples} = \frac{42.5}{5} \times 60 = 510$$

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

$$C.P. + \frac{20}{100} \times C.P. = 510$$

$$C.P. = \frac{510}{120} \times 100 = `425$$

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