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 is price is 50% above the cost price. If he allows his customer a discount 30% what profit dose 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 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) `938.50 (b) `940
(c) `938 (d) `937.50

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

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

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

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.

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

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

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 ⇒ x=12

∴% 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

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

Quantity Price

11 10

10 11

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 = ` $\frac{5}{10}$ = Rs $\frac{1}{2}$

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

⇒ He bought 12 eggs for 5 rupees.

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

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

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

He sells 32 oranges per rupee.

8. (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-$\frac{3}{2}$ = `$\frac{1}{2}$

∴ 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

∴ % profit = $\frac{105-100}{100} \times 100$=5%

10. (b) Let S.P. =` x per kg

∴ S.P. of 2 kg of rice = `2x = loss

now, Loss = C.P. –S.P.

2x = 600-10x

⇒x = `50 per kg

11. (a) Let CP = `100

Then, S.P. = `117

Let marked price be Rs. x.

Then, 90% of x = 117 ⇒ x= $\left(\frac{117\times100}{90}\right) = 130$

∴ 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 = `$\frac{120\times10}{9}$ = `$\frac{400}{3}$

⇒ 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 = `(80×13.50+120×16)

= `3000.

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

=`3480

∴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 100 grams (1 kg)

⇒ on every 800 grams, he gains (1000-800) grams i.e. 200 grams.

∴His gain % = $\frac{200}{800} \times 100\% = 25\%$

Short cut:

Gain % = $\frac{error}{true\ \ weig\ ht - error}$

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

16. C.P. of 150 calculators

=150 × 250+2500=37500+2500=` 40000

Labelled price of 150 calculators

=150×320 = ` 48000

Discount allowed = 5%

∴ S.P. of 150 calculators

= 48000-5% of 48000= `45600

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

17. (b) $\frac{True\ \ weig\ ht}{False\ \ weig\ ht} = \frac{100+gain\ \ \%}{100+x}$

Here S.P. = C.P. ∴ x =0

⇒ False weight = $\frac{1000\times100}{125} = 800\ gm$

18. Let cost price = `100

∴ Marked price = `135

After discount, selling price = 135-13.5 = 121.5

∴ profit % = 121.5-100 = 21.5%

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

Gain = 20%

∴ C.P. of the 1 st chair = $\frac{500\times100}{100+20} = \frac{500\times100}{120}$

$= \frac{1250}{3}$

S.P. of the 2nd chair = $\frac{500\times100}{100-12} = \frac{500\times100}{88}$

= ` 500 Loss = 12%

$\frac{500\times25}{22} = \frac{250\times25}{11}$

$= \frac{6250}{11}$

Now S.P. of both the chairs = `1000

C.P. of both the chairs

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

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

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

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

Shortcut Method:

$\frac{100\ (x+y)+2xy}{(100+x)+(100+y)} = \frac{100(20-12)+2\times20\times(-12)}{(100+20)+(100-12)}$

$= \frac{100\times8-480}{208} = \frac{320}{208}$ = 1.5% gain

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

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

∴ Average profit from men's shirt = 8% of 40 =3.2 out of 40. Over all avg.profit =6 out of 100 ∴ 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

⇒ 0.15 × CP_1 = 0.10 × CP_2

⇒ $\frac{CP_1}{CP_2} = \frac{0.10}{0.15} = \frac{2}{3}$

Also CP_1 + CP_2 =560

∴ $CP_1 = \frac{2}{(2+3)} \times 560$ =`224

and CP_2 = 560 – 224 = ` 336

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

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

20% of x – 10% of (3000-x) = 2% of 3000

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

⇒ 2x – 3000+x = 600

⇒ 3x = 3600 ⇒ x = 1200

23. (d) Here, SP_1 = SP_2

⇒ 140 CP_1 = 60CP_2⇒ $\frac{CP_1}{CP_2} = \frac{6}{14} = \frac{3}{7}$

∴$CP_1 = \frac{3}{(3+7)} \times 8000$ = `2400

and CP_2 = 8000-2400= `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

∴ C.P= 100/2.50* `.4=`4=`.160

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

⇒ Loss = 20 C.P. – 20 S.P.

⇒ 5C.P. = 20 C.P. – 20 S.P. ⇒ 20 S.P. = 15 C.P.

⇒ CP_1 of 20 articles = ` 20

⇒ SP_1 of 20 articles = ` 15

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

⇒ CP_2 of 20 articles = `15

⇒ CP_2 of 20 articles = `20

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

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

∴ S.P. of 4 kg = ` 4x

∴4x = $\frac{100-10}{100} \times 300$

⇒ x = $\frac{270}{4}$ =` 67.50

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

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

Wholesaler selling price = $\frac{59P}{50} + \frac{59P}{50} \times \frac{20}{100}$

$= \frac{59P}{50} + \frac{59P}{250} = \frac{354P}{250}$

Retailer selling price =$\frac{354P}{250} + \frac{354P}{250} \times \frac{25}{100}$

$= \frac{354P}{250} + \frac{177P}{500} = \frac{805P}{500}$

Now, $\frac{805P}{500} = 30.09$

⇒ P =17

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

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

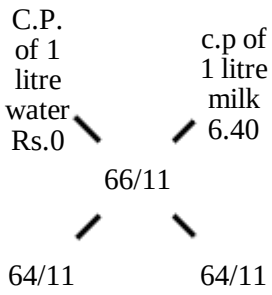
Shortcut method:

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

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

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

using allegation rule.



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

30. (b) Equivalent discount = 10+20 - $\frac{10\times20}{100}$

= 30-2 = 28%

31. (c) Retailer price = list price $\left(1 - \frac{d_1}{100}\right)\left(1 - d2100\right.$

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

⇒ $1 - \frac{d_2}{100} = \frac{122.40\times100}{160\times90} = 0.85$

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

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 × 150 = 120x

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

33. (c) SP = 90× 1.2 =Rs 108

Marked price = $\frac{108}{0.85}$= `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 ⇒ x= 12

∴ % 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

∴ Retailer's S.P. for 30 pens = M.P. of 30 pens

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

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

then discount = ` 16

∴ when discount = `80, then M.P. = ` x

Now, ↓ $\begin{matrix}100 & x\\ 16 & 80\end{matrix}$ ↓ it's direct proportion

∴ 100: x: : 16: 80

⇒ 16x = 100×80 ⇒ x =`500

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

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

37. (c) Let C.P. =`100. Then M.P. = ` 120 and S.P. =`108

% discount = $\left(\frac{12}{120} \times 100\right)$ % = 10%

38. (b) Offering price = $\frac{50\times108}{100}$=`54

After 10% discount, S.P. = 90% of 54

= $\frac{90\times54}{100}$ = `48.60

39. (c) $(100 + g_1): S_1 :: (100 + g_2): S_2$

$(100 + 20): 30 :: (100 + g_2): 30\left(1 - \frac{10}{100}\right)$

[∵ 10% discount is allowed on S.P.]

$120: 30:: (100 + g_2) : 27$

100+ g_2 = $\frac{120\times27}{30}$ = 108

⇒ 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.

⇒ 80% of x = 100

⇒ $x = \frac{100\times100}{80}$ =`125

41. (c) Let the C.P. be Rs. 100

S.P. = Rs 120

Discount being 4%, S.P. is 96% of sale price

∴ 96% of sale price = ` 120

⇒ Sale price is 25% higher than the C.P.

42. (d) Let his loss = ` x. Then,

C.P. = 5000+x = 5600-2x

⇒ 3x =600 ⇒ x = 200

∴ 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 ≈`37

44. (c) Let C.P. = ` x.

120% of $\left(\frac{225}{2}\% \; of \; x\right)$ = 2700

⇒ $\frac{120}{100} \times \frac{225}{2\times100} \times x$ = 2700 ⇒ 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

∴ Total S.P. = `$\frac{560}{12}x$

∴$\frac{560}{12}x = \frac{(100+5)\%}{100} \times 200$

⇒$x = \frac{105}{100} \times \frac{2400}{560}$ = `4.5 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 $\left(-8\frac{1}{3}\%\right)$ or 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) ÷ 2 ÷ (2) 3 gives $\frac{25}{4}T - \frac{25}{9}T$ = 1250

or, T $\left[\frac{225-100}{36}\right]$ = 1250

∴ T = 360 ∴ price of a table = `360

48. (d) Let the marked price be `x.

∵ C.P. = (x-25% of x) = $\frac{3}{4}x$

⇒ S.P. = $\left(\frac{3x}{4} + 10\% \; of \; \frac{3x}{4}\right) = \frac{33}{40}x$

But, $\frac{33}{40}x$ = 660 ⇒ x = 800.

49. (a) Let the marked price be `x.

∵ S.P. = (x-25% of x) = $\frac{3}{4}x$

But, S.P = ` 525

∴$\frac{3}{4}x = 525 \Rightarrow x = 700$

50. (c) Shortcut method:

Net profit =profit + Discount + $\frac{Profit \times Discount}{100}$

$\frac{25}{2} = 25$ – Discount - $\frac{25\times Discount}{100}$

('–' to represent discount)

$\frac{25}{2} - 25 = \frac{-5}{4}$ Discount

∴ Discount % = 10%

51. (c) 1st case:

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

$\Rightarrow$S.P. = $\frac{112.5}{100} CP$ .... (1)

IInd case:

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

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

$\Rightarrow$(S.P.+10) = $\frac{115}{100}$ C.P. ..... (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. = $\frac{S.P\times100}{112.5} = \frac{450\times100}{112.5}$ = 400

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

So profit = 20%

Markup = 10%

Total profit = 10+20 + $\frac{10\times20}{100}$=32%

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

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

Cost price of goods is 80% of its selling price

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

Profit on goods = (90 – 72) = `18

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

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

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

C.P = $\frac{0.8\times100}{125} = \frac{16}{25}x$

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

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

$\Rightarrow$ C.P. = $\frac{150\times100}{25}$=600

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

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

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

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

According to question

0.8x – 0.7x = 800

x= 800 × 10 = 8000

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

S.P. for A = 100 + 20% of 100 = 120

S.P. for B = 120 - 15% of 120 = 102

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

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

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

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

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

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

1.15 × 0.85x = 1955

x = $\frac{1955\times10000}{115\times85}$ = 2000

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

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

C.P. + Profit = S.P.

C.P. + $\frac{20}{100}$ × C.P. = 510

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