Assignment 2

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1. If an article is sold at a loss of 25%, and the selling price is ₹450, find the cost price.
    - Solution: CP = 450 / (1 - 0.25) = ₹600
2. A person bought an item for ₹1200 and sold it for ₹1440. What is the profit percentage?
    - Solution: Profit % = [(1440 - 1200) / 1200] * 100 = 20%
3. If the selling price of an item is ₹960 and the cost price is ₹800, what is the profit percentage?
    - Solution: Profit % = [(960 - 800) / 800] * 100 = 20%
4. A shopkeeper sells a fan at ₹1200 with a loss of 20%. Find the cost price.
    - Solution: CP = 1200 / (1 - 0.20) = ₹1500
5. If the cost price of an article is ₹400 and it is sold for ₹480, what is the profit percentage?
    - Solution: Profit % = [(480 - 400) / 400] * 100 = 20%
6. A trader gives two successive discounts of 20% and 10%. Find the net discount percentage.
    - Solution: Net discount % = 20 + 10 - (20 * 10) / 100 = 28%
7. A man sold a shirt for ₹800 after giving a 20% discount. Find the marked price.
    - Solution: MP = 800 / (1 - 0.20) = ₹1000
8. A watch is sold for ₹1800 with a 25% profit. Find the cost price.
    - Solution: CP = 1800 / (1 + 0.25) = ₹1440
9. A shopkeeper marks an article at ₹1500 and allows a 10% discount. Find the selling price.
    - Solution: SP = 1500 * (1 - 0.10) = ₹1350
10. A merchant buys 10 pens for ₹150 and sells them for ₹200. What is his profit percentage?
    - Solution: Profit % = [(200 - 150) / 150] * 100 = 33.33%
11. A trader gives a 15% discount on an item and still makes a profit of 20%. What is the markup percentage?
    - Solution: Let CP = 100, SP = 120. MP * 0.85 = 120 => MP = 120/0.85 = 141.17. Markup = 41.17%
12. A table is sold for ₹2250 at a 10% profit. What is the cost price?
    - Solution: CP = 2250 / (1 + 0.10) = ₹2045.45
13. If a shopkeeper wants a profit of 25% on an item that costs ₹800, what should be the selling price?
    - Solution: SP = 800 * (1 + 0.25) = ₹1000
14. A refrigerator is sold for ₹15,000 at a loss of 10%. Find the cost price.
    - Solution: CP = 15000 / (1 - 0.10) = ₹16,666.67
15. An article is marked 50% above the cost price and then sold at a discount of 20%. What is the profit percentage?
    - Solution: Let CP = 100, MP = 150, SP = 150 * 0.8 = 120. Profit % = 20%
16. A dealer makes a profit of 12% after allowing a 5% discount. Find the marked price of an article whose cost price is ₹400.
    - Solution: Let CP = 400. SP = 400 * 1.12 = 448. MP * 0.95 = 448 => MP = 471.58
17. A book is bought for ₹480 and sold for ₹576. What is the profit percentage?
    - Solution: [(576 - 480) / 480] * 100 = 20%
18. If a profit of ₹50 is made on an article whose cost price is ₹500, what is the profit percentage?
    - Solution: (50 / 500) * 100 = 10%
19. A shopkeeper sells a cycle at a 15% profit and the selling price is ₹2300. Find the cost price.
    - Solution: CP = 2300 / (1 + 0.15) = ₹2000
20. The cost price of an article is ₹750 and it is sold at ₹900. What is the gain percentage?

- Solution: [(900 - 750) / 750] * 100 = 20%

21. A man sells an item at 20% loss. If the selling price is ₹640, find the cost price.
    - Solution: CP = 640 / (1 - 0.20) = ₹800

22. A trader sells a mobile phone for ₹9600 at a profit of 20%. Find the cost price.
    - Solution: CP = 9600 / (1 + 0.20) = ₹8000

23. A shopkeeper sells an item for ₹500 at a 20% profit. What was the cost price?
    - Solution: CP = 500 / (1 + 0.20) = ₹416.67

24. A man buys two articles for ₹1500 each. He sells one at a 20% profit and the other at a 10% loss. Find his net profit/loss.
    - Solution:
    - Total CP = 3000.
    - SP1 = 1500 * 1.2 = 1800
    - SP2 = 1500 * 0.9 = 1350
    - Total SP = 3150.
    - Net Profit = 150. Profit % = 150/3000 * 100 = 5%

25. A trader sells an article at ₹1250 with a loss of 12%. Find the cost price.
    - Solution: CP = 1250 / (1 - 0.12) = ₹1420.45

26. Find the profit percent earned after selling an article at a doubled rate for half quantity.
    - Solution:
    - Let original price be x, quantity be Q. Original revenue = xQ
    - New price = 2x, New quantity = Q/2. New revenue = 2x * (Q/2) = xQ
    - The profit is 300%

27. A number is multiplied by 20% of itself, the sum is then doubled. If the final value is 490, find the number.
    - Solution:
    - Let the number be x.
    - 2 * (x + 0.2x) = 490
    - 2.4x = 490
    - x = 204.16

28. An article is sold at 20% less than its cost price. If the selling cost is 50 rupees and the selling cost is 5% of the selling price, find the loss.
    - Solution:
    - SC = 50. SP = 50 / 0.05 = 1000.
    - CP = 1000 / 0.8 = 1250.
    - Loss = 1250 - 1000 - 50 = 200

29. If the seller sells half of his goods at 20% loss and the rest of his goods at 50% profit, find the profit percentage on the entire transaction.
    - Solution:
    - Let total cost be 200
    - Half at 20% loss: -20, Half at 50% profit: +50. Net +30
    - Profit % = 30/200 * 100 = 15%

30. The expense of selling an article, worth rupees 6000, is 50 rupees. If the selling expenses is 10% more than the loss, find the loss percentage.
    - Solution:
    - Selling expense = 50
    - Loss = 50 / 1.1 = 45.45
    - Loss percentage = 45.45/6000 * 100 = 0.7575%

31. The profit on selling 1 article is equal to the cost price of 2 such articles. Find the profit percentage.
    - Solution:
    - Let CP of 1 article = x. Profit = 2x. SP = 3x.
    - Profit % = 2x/x * 100 = 200%

32. The initial price of an article is decreased by 20% but the selling price remains constant. If the initial profit was 500 rupees, find the new profit. It is known the initial profit percent was 20% of cost price

- Solution:
- Initial CP = 500 / 0.2 = 2500.
- SP = 2500 + 500 = 3000.
- New CP = 2500 * 0.8 = 2000.
- New Profit = 3000 - 2000 = 1000

33. The price of a pair of slippers is decreased by 10% and the selling price is constant. If the initial profit percentage was equal to 25%, find the new profit percentage.

- Solution:
- Let CP = 100, SP = 125.
- New CP = 100 * 0.9 = 90.
- New Profit % = (125-90)/90 * 100 = 38.89%

34. The cost price of an article is doubled, and the selling price is made half. If the initial profit percentage was 500%, find the profit percentage now.

- Solution:
- Let CP = 100, SP = 600.
- New CP = 200, New SP = 300.
- New Profit % = (300-200)/200 * 100 = 50%

35. A shopkeeper increases the price of sugar by 25%. By how much a family should decrease their consumption to maintain the regular price?

- Solution: Reduction = 25 / 125 * 100 = 20%

36. The profit on selling 15 articles is equal to the cost price of 2 articles. Find the profit percentage.

- Solution:
- Let CP of 15 articles = 15x. Profit = 2x. SP = 17x
- Profit % = 2x/15x * 100 = 13.33%

37. 40% of a number a is 50% of a number b, find the value of a : b.

- Solution: 0.4a = 0.5b => a/b = 0.5/0.4 = 5/4

38. The marked price of an article is 5 times the discount. Find the selling price in terms of discount.

- Solution: MP = 5D, SP = MP - D = 5D - D = 4D

39. Solve for x; x = 20% of 12% of 120% of 6250.

- Solution: x = 0.20 * 0.12 * 1.20 * 6250 = 180

40. A shopkeeper purchased an article for 500 rupees. At what price should he mark the article to allow a discount of 35% and still earn 100% profit.

- Solution:
- CP = 500, Desired SP = 1000.
- MP * 0.65 = 1000 => MP = 1000/0.65 = 1538.46

41. A is 25% more than b. By what percent is b smaller than a?

- Solution: [25 / (100 + 25)] * 100 = 20%

42. If the discount is twice the cost price and the marked price is 10000, find the selling price. No profit or loss was made.

- Solution:
- D = 2CP, MP = 10000, SP = CP (no profit no loss)
- MP = SP + D => 10000 = CP + 2CP => CP = 10000/3
- SP = 10000/3 = 3333.33

43. The cost price of an article is 30% less than the selling price. The discount is 40% of the selling price. If the marked price is 12600 rupees, find the cost price.

- Solution:
- Let SP = x. CP = 0.7x. Discount = 0.4x

- MP = SP + Discount => 12600 = x + 0.4x => x = 12600/1.4 = 9000
- CP = 0.7 * 9000 = 6300

44. If 33.33% of a number is 20 more than 16.66% of the number, find 120% of the number.

- Solution:
- Let the number be x.
- (1/3)x = (1/6)x + 20
- (1/6)x = 20 => x = 120
- 120% of x = 120 * 1.2 = 144

45. Find the number if, 20% of a number is 20 more than 20% of another number 20.

- Solution: This question is ambiguous. It should be "20% of a number is 20 more than 20% of the same number". In that case the answer is 100.

46. A number if doubled, then tripled and this process is repeated twice. What is the percentage change?

- Solution: Number is multiplied by 2*3*2*3 = 36. Change is 3500%

47. By how much should 234 be reduced to make it 65% of itself?

- Solution: Reduction = 234 - (0.65 * 234) = 81.9

48. What is 90% of 900% of 9000% of 9?

- Solution: 0.90 * 9 * 90 * 900 * 9 = 590490

49. Out of 25 employees of a company, 13 are set off and the salaries of rest of the employees is increased by 24%. Find the total increase of decrease in company's expenditure.

- Solution:
- Let initial salary of each employee be x. Total salary = 25x
- 12 employees remain. New salary = 12 * 1.24x = 14.88x
- Decrease = (25x - 14.88x)/25x * 100 = 40.48%

50. Zayn bought tickets to concert for Rs. 3500. He wants to sell them at a discount of 15%. What is the discount in Rs.?

- Solution: 3500 * 0.15 = 525