Topic : Percentage & Profit & Loss question Bank
Deadline: Monday 10th March

080_Shital Hiray_JH

1. What is 25% of 200?
    a) 25
    b) 50\
    c) 75\
    d) 100

Ans: b)

2. If 40% of a number is 80, what is the number?
    a) 100\
    b) 150\
    c) 200\
    d) 250

Ans: c)

3. 75% of a number is 150. What is the number?
    a) 175
    b) 200
    c) 225\
    d) 250

Ans: b)

4. What is 15% of 120?
    a) 12\
    b) 15\
    c) 18\
    d) 20

Ans.: c)

5. If 30% of a number is 90, then the number is:\
    a) 200\
    b) 250\
    c) 300\
    d) 350

Ans: c)

6. The price of a product increases from ₹200 to ₹250. What is the percentage increase?\

a) 20%\
b) 25%\
c) 30%\
d) 35%

Ans: b)

7. A salary increases from ₹40,000 to ₹50,000. What is the percentage increase?\
    a) 20%\
    b) 25%\
    c) 30%\
    d) 35%

Ans: b)

8. The population of a town decreased from 10,000 to 8,000. What is the percentage decrease?\
    a) 10%\
    b) 15%\
    c) 20%\
    d) 25%

Ans: c)

9. A book's price drops from ₹500 to ₹400. What is the percentage decrease?\
    a) 10%\
    b) 15%\
    c) 20%\
    d) 25%

Ans: c)

10. If the cost price of an item is ₹600 and the selling price is ₹450, what is the percentage loss?\
    a) 20%\
    b) 22.5%\
    c) 25%\
    d) 30%

Ans: c)

1. ### **Section 3: Percentage Comparison**

11. Which is greater: 30% of 400 or 40% of 300?\
    a) 30% of 400\
    b) 40% of 300\
    c) Both are equal\

d) Cannot be determined

Ans: c)

12. A person spends 60% of his income and saves ₹8,000. What is his total income?\
    a) ₹15,000\
    b) ₹18,000\
    c) ₹20,000\
    d) ₹25,000

Ans: c)

13. If A is 20% more than B, then B is how much less than A?\
    a) 20%\
    b) 16.67%\
    c) 25%\
    d) 10%

Ans.: b)

14. If the price of sugar is increased by 25%, by how much should the consumption be reduced to maintain the same expense?\
    a) 20%\
    b) 25%\
    c) 30%\
    d) 15%

Ans: a)

15. If A's income is 40% more than B's income, then B's income is what percentage less than A's?\
    a) 28.57%\
    b) 30%\
    c) 33.33%\
    d) 40%

Ans: a)

16. The price of an item is increased by 20% and then decreased by 10%. What is the net percentage change?\
    a) 8% increase\
    b) 8% decrease\
    c) 10% increase\
    d) 10% decrease

Ans: a)

17. A number is increased by 30% and then decreased by 20%. What is the final percentage change?\

a) 4% increase\

b) 8% increase\

c) 10% increase\

d) 12% increase

Ans.: a)

18. If the population of a city increases by 25% and then decreases by 20%, what is the net percentage change?\

    a) 0%\

    b) 5% increase\

    c) 10% decrease\

    d) 5% decrease

Ans: a)

19. If a price increases by 40% and then decreases by 30%, the final change is:\

    a) 2% increase\

    b) 10% increase\

    c) 10% decrease\

    d) 2% decrease

Ans: d)

20. The salary of a person is first increased by 20% and then decreased by 10%. What is the overall percentage change?\

    a) 8% increase\

    b) 10% increase\

    c) 10% decrease\

    d) No change

Ans: a)

21. If an article is sold at a profit of 25%, then the selling price is what percentage of the cost price?\

    a) 100%\

    b) 125%\

    c) 150%\

    d) 175%

Ans: b)

22. A shopkeeper allows a discount of 10% on the marked price and still makes a profit of 8%. If the marked price is ₹500, what is the cost price?\

    a) ₹400\

    b) ₹420\

c) ₹450\

d) ₹460

Ans: b)

23. If the profit is 20% of the cost price, then what is the profit percentage on the selling price?

a) 16.67%\

b) 18%\

c) 20%\

d) 22%

Ans: a)

24. A product is marked at ₹1,200 and sold for ₹960. What is the percentage discount given?

a) 15%\

b) 20%\

c) 25%\

d) 30%

Ans: b)

25. If an article is bought for ₹500 and sold for ₹650, what is the percentage profit?

a) 20%\

b) 25%\

c) 30%\

d) 35%

Ans: c)

26. .If A's income is 20% more than B's, then B's income is what percentage less than A's?

a) 16.67%

b) 18%

c) 20%

d) 25%

Ans: a)

27.If the ratio of boys to girls in a school is 3:2, what percentage of the total students are boys?

e) 30%

f) 40%

g) 50%

h) 60%

Ans: h)

28 A city's population increased from 2,00,000 to 2,50,000 in 2 years. What is the percentage increase?

a. 20%

b. 25%

c. 30%

d. 35%

Ans: b)

29 In an election, a candidate gets 65% of the total votes and wins by 3000 votes. How many total votes were cast?

a. 5000

b. 6000

c. 8000

d. 9000

Ans: d)10000 correct answer

30 The price of an article is reduced by 30%. By what percentage must the new price be increased to restore the original price?

a. 30%

b. 42.85%

c. 50%

d. 60%

Ans: b)

31 If a number is increased by 50% and then decreased by 50%, what is the net percentage change?

a. 0%

b. 25% decrease

c. 50% decrease

d. 75% decrease

Ans: b)

32 If A is 20% taller than B, then B is shorter than A by:

a. 16.67%

b. 18%

c. 20%

d. 25%

Ans: a)

33 If 30% of a number is 90, what is 60% of the same number?

a. 120

b. 150

c. 180

d. 200

Ans: c)

34 A person spends 75% of his income and saves ₹5000. What is his total income?

a. ₹15,000

b. ₹18,000

c. ₹20,000

d. ₹25,000

Ans: c)

35 The price of petrol increases by 20%. By what percentage should consumption be reduced to maintain the same expense?

a. 16.67%

b. 18%

c. 20%

d. 25%

Ans: a)

36 The price of a TV was first increased by 20% and then decreased by 10%. What is the overall percentage change?

a. 8% increase

b. 10% increase

c. 10% decrease

d. No change

Ans: a)

37 A shopkeeper marks an item 25% above the cost price and gives a 20% discount. What is his profit/loss percentage?

a. 0%

b. 2% profit

c. 5% profit

d. 10% loss

Ans: a)

38 If the cost price of an article is ₹500 and it is sold at a loss of 20%, what is the selling price?

a. ₹350

b. ₹375

c. ₹400

d. ₹450

Ans: c)

39 If a salary is increased by 10% and then decreased by 10%, what is the final percentage change?

a. 0%

b. 1% decrease

c. 1% increase

d. 2% decrease

Ans: b)

40 A student needs 40% marks to pass. He gets 200 marks and fails by 20 marks. What are the total marks?

a. 500

b. 550

c. 600

d. 650

Ans: b)

41 A man spends 20% of his salary on rent, 30% on food, and 10% on transport. If he saves ₹18,000, what is his salary?

a. ₹40,000

b. ₹45,000

c. ₹50,000

d. ₹55,000

Ans: b)

42 The cost of an item is first increased by 30% and then decreased by 30%. What is the overall percentage change?

a. 0%

b. 9% decrease

c. 9% increase

d. 15% decrease

Ans: b)

43) The population of a town increases by 10% every year. If the current population is 10,000, what will it be after 3 years?
a) 13,310
b) 13,500
c) 14,000
d) 14,200

Ans: a)

44) If 15% of A is equal to 20% of B, then A:B is:
a) 3:4
b) 4:3
c) 3:5
d) 5:3

Ans: b)

45) If the cost price of an item is ₹800 and the profit made is 25%, what is the selling price?

a) ₹900
b) ₹1000
c) ₹1050
d) ₹1100

Ans: b)

46) If the cost price (CP) of an item is ₹200 and the selling price (SP) is ₹250, what is the profit percentage?
a) 20%
b) 25%
c) 30%
d) 40%

Ans: b)

47) A man sells an article for ₹720 at a profit of 20%. Find the cost price.
a) ₹600
b) ₹620
c) ₹650
d) ₹700

Ans: a)

48) A shopkeeper sells an item at a loss of 15%. If the cost price is ₹500, find the selling price.
a) ₹400
b) ₹425
c) ₹450
d) ₹475

Ans: b)

49) A man purchased a cycle for ₹1500 and sold it at a loss of 10%. What was the selling price?
a) ₹1200
b) ₹1300
c) ₹1350
d) ₹1400

Ans: c)

50) A trader marks his goods at 30% above the cost price and allows a discount of 10%. What is his gain percent?
a) 17%
b) 18%
c) 19%
d) 20%

Ans: a)

Profit & loss & percentage Question Bank

(1) What is 25% of 200?

→

$$25\% \text{ of } 200 = \frac{25}{100} \times 200 = 50$$

(2) If 40% of a number is 80, what is the number?

→

$$40\% \text{ of } x = 80$$

$$\frac{40}{100} \times x = 80$$

$$x = \frac{80 \times 100}{40}$$

$$x = \frac{800}{40}$$

$$\boxed{x = 200}$$

(3) 75% of a number is 150. What is the number?

→

75% of number = 150

$$75\% \text{ of } x = 150$$

$$\frac{75}{100} \times x = 150$$

$$x = \frac{150 \times 100}{75}$$

$$= \frac{1500}{75}$$

$$\boxed{x = 200}$$

(4) What is 15% of 120 ?

→

$$15\% = \frac{15}{100}$$

Multiply by 120.

$$\frac{15}{100} \times 120 = \frac{15 \times 120}{100}$$

$$= \frac{1800}{100}$$

15% of 120 is = 18

(5) If 30% of a number is 90, then the number is

→

30% of a number = 90

30% of x = 90

$$\frac{30}{100} \times x = 90.$$

$$x = \frac{90 \times 100}{30}$$

$$x = \frac{9000}{30}$$

$$\boxed{x = 300}$$

(6) The price of product increases from ₹ 200 to ₹250 what is the percentage increase ?

→

Initial price = 200

New price = 250

Increase = New price - Initial price.

= 250 - 200

= 50

Calculate the percentage

$$\text{Percentage Increase} = \left(\frac{\text{Increase}}{\text{Initial price}}\right) \times 100$$

$$= \frac{50}{200} \times 100$$

$$= \frac{5000}{200}$$

$$= 25\%$$

(7) A salary increases from ₹40000 to ₹50000. what is the percentage increase?

→

Initial salary = 40000

New Salary = 50000

Increase = New salary - Initial salary

= 50000 - 40000

= 10000

Calculate the percentage

$$\text{percentage Increase} = \left(\frac{\text{Increase}}{\text{Initial salary}}\right) \times 100$$

$$= \left(\frac{10000}{40000}\right) \times 100$$

$$= \frac{1}{4} \times 100$$

$$= 25\%$$

(8) The population of town decreased from 10,000 to 8,000 what is the percentage decrease?

→

Initial population = 10,000

New population = 8,0000

Decrease = Initial population − New population

= 10000 − 8000

= 2000

Calculate the percentage.

$$\text{percentage decrease} = \left(\frac{\text{Decrease}}{\text{Initial population}}\right) \times 100$$

$$= \left(\frac{200}{10000}\right) \times 100$$

$$= 0.2 \times 100$$

$$= 20\%$$

(9) A book's price drops from ₹500 to ₹400. what is the percentage decrease?

→

Initial price = 500

New price = 400

Decrease = Initial price − New price

= 500 − 400

= 100

Calculate the percentage.

$$\text{Percentage Decrease} = \left(\frac{\text{Decrease}}{\text{initial price}}\right) \times 100$$

$$= \frac{100}{500} \times 100$$

$$= 0.2 \times 100$$

$$= 20\%$$

(10) If the cost price of an item is ₹600 and the selling price is ₹450, what is the percentage loss.

→

Cost price (CP) = ₹600

selling price (SP) = ₹450

Loss = cost price − selling price

= 600 − 450

= 150

Calculate the percentage

$$\text{Percentage Loss} = \left(\frac{\text{Loss}}{\text{cost price}}\right) \times 100$$

$$= \frac{150}{600} \times 100$$

$$= 0.25 \times 100$$

$$= 25\%$$

(11) Which is greater : 30% of 400 or 40% of 300?

→

30% of $400 = \frac{30}{100} \times 400 = 120$

40% of $300 = \frac{40}{100} \times 300 = 120$

= Both are equal

(12) A person spends 60% of his income and saves ₹ 8000. What is his total income?

→ 60% of income is spend

40% of income save

Saving amt is = 8000

40% of x is equal to 8000

$40\% \times x = 8000$

$\frac{40}{100} \times x = 8000$

$40x = 8000 \times 100$

$40x = 80000$

$x = \frac{8000\cancel{0}}{.4\cancel{0}}$

$\boxed{x = 20000}$

(13) If A is 20% more than B, then B is how much less than A

→ B = 100

A is 20% more than B

$A = B + 20\%$ of B

$= \frac{100 + 20}{100} \times 100$

$= 100 + 20$

$\boxed{A = 120}$

How much B less than A.

Percentage decrease $= \left(\frac{A - B}{A}\right) \times 100$

$= \left(\frac{120 - 100}{120}\right) \times 100$

$= \left(\frac{20}{120}\right) \times 100$

$= \frac{2000}{120}$

$= 16.67\%$

(14) If the price of sugar is increased by 25% by how much should the consumption be reduced to maintain the same expense?

→

Original price of sugar = ₹100 per kg.

Original consumption = 100 kg.

Total expenses = $100 \times 100 = 10,000$

New price $= \frac{100 + 25}{100} \times 100$

$= 100 + 25$

$= 125$ kg.

Find the New Consumption

New price × New consumption = old Expense.

$$125 \times x = 10000$$

$$x = \frac{10000}{125}$$

$$\boxed{x = 80 \text{ kg}}$$

Calculate the Reduction in Consumption

= old consumption - New consumption

= 100 - 80

= 20 kg.

Percentage reduction $= \left(\frac{20}{100}\right) \times 100$

$= 20\%$

(15) If A's income is 40% more than B's income, then B's income is what percentage less than A's ?

→

B's income = 100

A's income is 40% more than B's

$A = B + 40\%$ of B

$= 100 + \frac{40}{100} \times 100$

$= 140$

How much B's income is less than A's.

Percentage decrease $= \left(\frac{A - B}{A}\right) \times 100$

$= \left(\frac{140-100}{140}\right) \times 100$

$= \frac{40}{140} \times 100$

$= \frac{4000}{140}$

$= 28.75\%$

(16) The price of an item is increased by 20% and then decreased by 10%. what is the net percentage change?

→

Original price of item = 100

Apply the first change (increase by 20%)

New price $= 100 + \frac{20}{100} \times 100$

$= 100 + 20$

$= 120$

Apply the second change (Decrease by 10%)

first price $= \frac{120 - 10}{100} \times 120$

$= 120 - 12$

$= 108$

Calculate Net percentage change

Net Change $= \left(\frac{\text{Final price} - \text{original price}}{\text{Original price}}\right) \times 100$

$= \left(\frac{108-100}{100}\right) \times 100$

$= \frac{8}{100} \times 100 = 8\%$

(17) A number is increased by 30% and then decreased by 20%, what is the final percentage change?

→

Original number = 100

New value = $100 + \left(\frac{30}{100}\right) \times 100$

$= 100 + 30$

$= 130$

Final value = $130 - \left(\frac{20}{100}\right) \times 130$

$= 130 - 26$

$= 104$

Net change = $\left(\frac{\text{Final value} - \text{original value}}{\text{original value}}\right)$

$= \left(\frac{104 - 100}{100}\right) \times 100$

$= \frac{4}{100} \times 100$

$= 4\%$

(18) If the population of a city increases by 25% and decreases by 20%, what is the net percentage

→

Initial population = 100.

New population = $100 + \frac{25}{100} \times 100$

$= 100 + 25 = 125$

Final population $= 125 + \frac{20}{100} \times 125$

$= 125 + 25$

$= 100$

Net change $= \left(\frac{\text{Final population} - \text{Initial population}}{\text{Initial population}}\right) \times 100$

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

$= 0\%$

(19) If a price increases by 40% and then decreases by 30%, the final change is.

→

Initial Price $= 100$

New Price $= 100 + \left(\frac{40}{100} \times 100\right)$

$= 100 + 40$

$= 140$

Final Price $= 140 - \left(\frac{30}{100}\right) \times 140$

$= 140 - 42$

$= 98$

Net Change $= \left(\frac{\text{Final price} - \text{Initial price}}{\text{Initial price}}\right) \times 100$

$= \left(\frac{98 - 100}{100}\right) \times 100$

$= \frac{-2}{100} \times 100$

$= -2\%$

(20) The salary of a person is first increased by 20% and then decreased by 10%. What is overall percentage change.

→

Initial salary = 100

New salary = $100 + \frac{20}{100} \times 100$

$= 100 + 20$

$= 120$

Final salary = $120 - \frac{10}{100} \times 120$

$= 120 - 12$

$= 108$

Net change = $\left(\frac{\text{Final salary} - \text{Initial salary}}{\text{Initial salary}}\right) \times 100$

$= \frac{108 - 100}{120} \times 100$

$= \frac{08}{120} \times 100$

$= 08\%$

Net change = 8%.

(21) If an article is sold at a profit of 25%, then the selling price is what percentage of the cost price?

→

Profit of 25%.

Selling price = CP + profit

Profit = 25% of CP

$= \frac{25}{100} \times CP$

$= 0.25 \times CP$

Calculate the SP =

$SP = CP + 0.25 \times CP$

$SP = (1 + 0.25) \times CP$

$\boxed{SP = 1.25 \times CP}$

$SP = 1.25 \times 100\%$

$= 125\%$ of CP.

$\boxed{CP = 125\%}$

(22) A shopkeeper allows a discount of 10% on the marked price and still makes a profit of 8%. If the marked price is ₹500, what is the cost price?

→

Marked price (MP) = ₹ 500

Discount = 10%

Profit = 8%

Calculate the selling price (SP)

SP = MP − Discount

= 500 − (10% of 500)

$$SP = 500 - \left(\frac{10}{100} \times 500\right)$$

$$= 500 - 50$$

$$\boxed{SP = 450}$$

Profit formula to find cost price (CP)

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

$$CP = \frac{450}{1 + \frac{8}{100}}$$

$$CP = \frac{450}{1.08}$$

$$\boxed{CP = 416.67}$$

$$\boxed{\text{Closest value is } 420}$$

(23) If the profit is 20% of the cost price, then what is the profit percentage on the selling price?

→

Profit is 20% of the cost price (CP)

profit percentage on the selling price (SP)

Profit formula is $= SP - CP$

$$\text{Profit} = 0.20 \times CP$$

$$\text{selling price} = CP + \text{profit}$$

$$SP = CP + 0.20 \times CP$$

$SP = 1.20 \times CP$

$= \frac{0.20}{1.20} \times 100$

$= \frac{20}{100} \times 100$

$= \frac{100}{6}$

$SP = 16.67\%$

(24) A product is marked at ₹ 1200 and sold for ₹ 960. what is the percentage discount given?

→

Marked price (MP) = 1200

Selling price (SP) = 960

Percentage discount = MP - SP

$= 120 - 960 = 240$

$= \frac{240}{1200} \times 100$

$= 0.20 \times 100$

$= 20\%$.

∴ Percentage discount = 20%.

(25) If an article is bought for ₹ 500 and sold for ₹ 650 what is the percentage profit?

→

Cost price = 500

Selling price = 650

Profit = SP - CP = 650 - 500 = 150

$$\frac{150}{500} = 0.30$$

$$= 0.30 \times 100$$

$$= 30\%$$

Percentage Profit = 30%

(26) If A's income is 20% more than B's, then B's income is what percentage less than A's?

→

A's income is 20% more than B's income

Assume,

B's income = 100

A's income = B's income + 20% of B's income.

$$= 100 + \frac{20}{100} \times 100$$

$$= 100 + 20$$

$$= 120$$

Difference = A's income - B's income

$$= 120 - 100$$

$$= 20$$

$$\text{percentage decrease} = \frac{\text{Difference}}{\text{A's income}} \times 100$$

$$= \frac{20}{120} \times 100$$

$$= \frac{2000}{120}$$

Percentage Decrease = 16.67%

(27) If the ratio of boys to girls in a school is 3:2, what percentage of the total students are boys?

→

Total students = $3x + 2x$

$= 5x$

Find Percentage of Boys:

$$\frac{\text{Number of Boys}}{\text{Total students}} \times 100$$

$$= \frac{3x}{5x} \times 100$$

$$= \frac{3}{5} \times 100$$

Total students of Boys = 60%

(28) A City's population increased from 2,00,000 to 2,50,000 in 2 years. what is the percentage increase?

→

Initial population = 2,00,000

Final population = 2,50,000

Time = 2 years.

Calculate Increase in population.

Increase = Final population - Initial population

= 250000 - 200000

= 50000

Find the percentage increase:

$$\text{percentage increase} = \frac{\text{increase}}{\text{initial population}} \times 100$$

$\frac{50000}{200000} \times 100$

$\frac{50000}{200000}$

$= 0.25$

$= 0.25 \times 100$

$= 25\%$

Population increased by 25%

In an election, a candidate gets 65% of the total votes and wins by 3000 votes. How many total votes were cast?

Winning candidate gets 65% total votes.
Candidate wins by 3000 votes

Total votes be x.

$100\% - 65\% = 35\%$.

votes of winning candidate − votes of lossing candidate = 3000

65% of x − 35% of x = 3000

$\left(\frac{65x}{100} - \frac{35x}{100}\right) = 3000$

$\frac{30x}{100} = 3000$

$$x = \frac{3000 \times 100}{30}$$

$$= \frac{300000}{30}$$

$$x = 10000$$

Total votes = 10000

(30) The price of an article is reduced by 30%. By what percentage must the new price be increased to restore the original price?

⟶

Price of an article is reduced by 30%

Original price = 100 (Assume)

$$\text{New price} = 100 - \left(\frac{30}{100} \times 100\right)$$

$$= 100 - 30$$

$$= 70$$

$$\text{Increase} = 100 - 70$$

$$= 30$$

$$\text{percentage increase is} = \frac{\text{Increase}}{\text{New price}} \times 100$$

$$= \frac{30}{70} \times 100$$

$$= \frac{3000}{70}$$

Restore original price is = 42.85%

(31) If a number is increased by 50% and then decreased by 50%, what is the net percentage change?

→

Original number = 100

Increase by 50%.

$$\text{New value} = 100 + \left(\frac{50}{100} \times 100\right)$$

$$= 100 + 50$$

$$= 150$$

Decrease by 50%.

$$\text{Final value} = 150 - \left(\frac{50}{100} \times 150\right)$$

$$= 150 - 75$$

$$= 75$$

Net Percentage Change = $100 - 75$

$= 25$

percentage decrease is $= \frac{25}{100} \times 100$

$= 25\%$

∴ Net percentage change is = 25%

(32) If A is 20% taller than B, then B is shorter than A by:

→

A is 20% taller than B

B's height = 100

A is 20% taller than B

A's height = B's height + 20% of B's height

$= 100 + \frac{20}{100} \times 100$

$= 100 + 20$

$\therefore$ A's height $= 120$

Height Between A & B is.

Difference = A's height − B's height

$= 120 - 100$

$= 20$

Percentage decrease $= \frac{\text{Difference}}{\text{A's Height}} \times 100$

$= \frac{20}{120} \times 100$

$= \frac{2000}{120}$

$= 16.67\%$

$\therefore$ B is 16.67% Shorter than A

(33) If 30% of a number is 90, what is 60% of the same number?

→

30% of number = 90

Find 60% of same number

$\frac{30}{100} \times x = 90$

$0.3x = 90$

$$x = \frac{90}{0.3}$$

$$x = 300$$

Find 60% of x

$$\frac{60}{100} \times 300$$

$$0.6 \times 300 = 180$$

∴ 60% of the number is 180

(34) A person spends 75% of his income and saves ₹ 5000. What is his total income?

→

Spend 75% of his income.

Saves ₹5000

Total income = ?

100 − 75 = 25 (remaining)

$$\frac{25}{100} \times x = 5000$$

$$0.25x = 5000$$

$$x = \frac{5000}{0.25}$$

$$x = 5000 \times 4$$

$$x = 20000$$

∴ his total income is = 20000

(35) The price of petrol increases by 20%. By what percentage should consumption be reduced to maintain the same expense?

→

Price of petrol increase by 20%.

Initial price of petrol = 100 per liter

Initial consumption = 100 liters.

Total expense = $100 \times 100 = 10000$

20% increase in price,

$$\text{New price} = 100 + \frac{20}{100} \times 100$$

$$= 120$$

New consumption bex.

total expense remains 10000/-

New price × New Consumption. = Old Expense.

$$120 \times x = 10{,}000$$

$$x = \frac{10000}{120}$$

$$x = 83.33 \text{ liters}$$

percentage Reduction:

$$100 - 83.33 = 16.67$$

$$\frac{16.67}{100} \times 100$$

$$= 16.67\%.$$

∴ Consumption must be reduced by 16.67% the same expense.

(36) The price of a TV was first increase by 20% and then decreased by 10%. What is the overall percentage change?

→

The price of a TV is first increased by 20%.
Then it is decreased by 10%.

Initial price = 100

Increase by 20%.

$$\text{New price} = 100 + \left(\frac{20}{100} \times 100\right)$$

$$= 100 + 20$$

$$= 120$$

Decrease by 10%.

$$\text{Final price} = 120 - \left(\frac{10}{100} \times 120\right)$$

$$= 120 - 12$$

$$= 108.$$

$\therefore$ Percentage change = Final price - Initial price

$$= 108 - 100$$

$$= 8$$

Higher than initial price is

$$\frac{8}{100} \times 100$$

$$= 8\%$$

$\therefore$ overall Percentage change is an 8% increase

(37) A shopkeeper marks an item 25% above the cost price and gives a 20% discount. what is his profit / loss percentage ?

→

Cost price = 25%

marked price discount = 20%

Cost price = 100 (Assume)

$$MP = 100 + \frac{25}{100} \times 100$$

$$= 100 + 25$$

$$= 125$$

$$\text{Selling price} = MP - \left(\frac{20}{100} \times MP\right)$$

$$= 125 - \left(\frac{20}{100} \times 125\right)$$

$$= 125 - 25$$

$$= 100$$

$$\text{Profit / Loss} = SP - CP$$

$$= 100 - 100$$

$$= 0$$

∴ shopkeeper neither gains nor loses money

(38) If the cost price of an article is ₹500 and it is sold at a loss of 20%, what is the selling price ?

→

Cost price = 500

loss percentage = 20%

∴ Loss formula =

$$SP = 500 - \left(\frac{20}{100} \times 500\right)$$

$$= 500 - (100)$$

$$= 400$$

∴ selling price is 400

(39) If a salary is increased by 10% and then decreased by 10%. what is the final percentage change?

→

A salary is first increased by 10%.
decreased by 10%:

Initial salary = 100

$$\text{New salary} = 100 + \left(\frac{10}{100} \times 100\right)$$

$$= 100 + 10$$

$$= 110$$

Decrease by 10%.

$$\text{Final salary} = 110 - \left(\frac{10}{100} \times 100\right)$$

$$= 110 - 11$$

$$= 99$$

Overall Percentage change = Final Salary - Initial Salary

$$= 99 - 100$$

$$= -1$$

$$\frac{1}{100} \times 100 = 1\% \text{ decrease.}$$

∴ Final percentage change is 1% decrease

(40) A student needs 40% marks to pass. He gets 200 marks and fails by 20 marks. What are the total marks?

→

Student needs 40% marks of pass

He gets 200 marks but fails by 20 marks.

Passing marks = 200 + 20 = 220

40% of total marks = 220

$\frac{40}{100} \times$ Total marks = 220

$0.4 \times$ Total marks = 220

Total marks = $\frac{220}{0.4}$

= 550

∴ Total marks are = 550

(41) A man spends 20% of his salary on rent, 30% on food and 10% on transport. If he saves ₹18000 what is his salary?

→ 20% of salary is spent on rent

30% of salary is spent on food

10% of salary is spent on transport

The remaining amount (savings) = 18000

Total Percent spent = 20% + 30% + 10%

= 60%

40% of salary = 18000

$= \frac{40}{100} \times$ salary = 18000

$0.4 \times \text{Salary} = 18000$

$$\text{Salary} = \frac{18000}{0.4}$$

$$= 45000$$

∴ man's salary is 45000

(42) The cost of an item is first increase by 30% and it decreased by 30%. what is the overall percentage cha

→

The cost of an item is first increased by 30%, decrease by 30%.

Initial cost price = 100

Increase by 30%.

$$\text{New price} = 100 + \left(\frac{30}{100} \times 100\right)$$

$$= 100 + 30$$

$$= 130$$

Decrease by 30%.

$$\text{Final price} = 130 - \left(\frac{30}{100} \times 130\right)$$

$$= 130 - 39$$

$$= 91$$

Overall percentage change = Final price - Initial price

$$= 91 - 100 = -9$$

decreased percentage $= \frac{9}{100} \times 100 = 9\%$ decrease

∴ Overall percentage change is = 9% decrease

(43) The population of a town increase by 10% every year. If the current population is 10000, what will it be after 3 years?

→

Current population = 10,000

Annual increase = 10%

Time = 3 years.

Population growth formula:

$$P = P_0 \times \left(1 + \frac{r}{100}\right)^t$$

$P_0 = 10000$ (initial population)

$r = 10\%$ (growth rate)

$t = 3$ years.

$$P = 10000 \times \left(1 + \frac{10}{100}\right)^3$$

$$P = 10000 \times (1.1)^3$$

Calculate the growth:

$(1.1)^3 = 1.1 \times 1.1 \times 1.1 = 1.331$

$P = 10000 \times 1.331$

$= 13310$

∴ The population after 3 years = 13310

(44) If 15% of A is equal to 20% of B the A:B is.

→

15% of A = 20% of B

ratio = A : B

$$\frac{15}{100} \times A = \frac{20}{100} \times B$$

$$\frac{15A}{100} = \frac{20B}{100}$$

$$15A = 20B.$$

Solve A : B.

Both sides by 5 divided.

$$3A = 4B$$

$$\frac{A}{B} = \frac{4}{3}$$

$$A:B = 4:3.$$

∴ The Ratio A:B is 4:3

(45) If the cost price of an item is ₹800 and the profit is 25%. what is the selling price.

→

Cost price = 800

Profit Percentage = 25%

$$SP = 800 + \left(\frac{25}{100} \times 800\right)$$

$$= \frac{25}{100} \times 800 \quad = 200$$

$$= 800 + 200$$

$$= 1000$$

∴ The selling price is 10000

(46) If the cost price (CP) of an item is ₹ 200 and the selling price (SP) is ₹ 250, what is the profit percentage?

→

Cost price (CP) = 200

Selling price = 250

Profit formula = SP - CP

= 250 - 200

= 50

Profit percentage formula = $\left(\frac{50 \times 100}{200}\right)$

$= \frac{5000}{200}$

∴ The profit percentage is = 25%.

(47) A man sells an article for ₹ 720 at a profit of 20%. Find the cost price.

→

Selling price = 720

profit percentage = 20%.

Cost price formula = $\frac{720 \times 100}{100 + 20}$

$= \frac{720 \times 100}{120}$

$= \frac{72000}{120}$

$= 600$

∴ the cost price is 600

(48) A shopkeeper sells an item at a loss of 15%. If the cost price is ₹ 500. Find the selling price.

→

Cost price = 500

Loss percentage = 15%.

Selling price = $\frac{500 \times (100-15)}{100}$

$= \frac{500 \times 85}{100}$

Calculate the selling price

$= \frac{42500}{100}$

$= 425$

∴ The selling price is 425

(49) A man purchased a cycle for 1500 and sold it at a loss of 10%. What was the selling price?

→

Cost price = 1500

Loss percentage = 10%

Selling price = $\frac{1500 \times (100-10)}{100}$

$= \frac{1500 \times 90}{100}$

$= \frac{135000}{100}$

$= 1350$

∴ The selling price is 1350

(50) A trader marks his goods at 30% above the cost price and allows a discount of 10%. what is his gain percent ?.

→

Make-up = 30%.

Discount = 10%.

$$MP = CP + \left(\frac{30}{100} \times CP\right)$$

$$= CP \times 1.3$$

$$\text{Selling price} = MP - \left(\frac{10}{100} \times MP\right)$$

$$= MP \times (1 - 0.10)$$

$$= MP \times 0.90$$

$$MP = CP \times 1.3$$

$$SP = (CP \times 1.3) \times 0.90$$

$$SP = CP \times 1.17$$

$$\left(\frac{1.17CP - CP}{CP}\right) \times 100$$

$$\left(\frac{0.17CP}{CP}\right) \times 100$$

$$= 17\%$$

∴ The gain percentage is = 17%.