EXERCISE NO. 2

SET – A

-:2.1:-

Express as percents

i) $\frac{1}{2}$ **ii)** $\frac{3}{5}$ **iii)** $\frac{3}{25}$ **iv)** $1\frac{1}{2}$

v) $2\frac{1}{4}$ **vi)** $\frac{1}{50}$ **vii)** $\frac{8}{10}$ **viii)** $\frac{1}{4}$

SOLUTION

(i) $\frac{1}{2} = \left(\frac{1}{2} \times 100\right)\% = 50\%$

(ii) $\frac{3}{5} = \left(\frac{3}{5} \times 100\right)\% = 60\%$

(iii) $\frac{3}{25} = \left(\frac{3}{25} \times 100\right)\% = 12\%$

(iv) $1\frac{1}{2} = \frac{3}{2} = \left(\frac{3}{2} \times 100\right)\% = 150\%$

(v) $2\frac{1}{4} = \frac{9}{4} = \left(\frac{9}{4} \times 100\right)\% = 225\%$

(vi) $\frac{1}{50} = \left(\frac{1}{50} \times 100\right)\% = 2\%$

(vii) $\frac{8}{10} = \left(\frac{8}{10} \times 100\right)\% = 80\%$

(vii) $\frac{1}{4} = \left(\frac{1}{4} \times 100\right)\% = 25\%$

-:2.2:-

Express the decimals as percents.

i) 0.25 ii) 0.06 iii) 0.89 iv) 0.17

SOLUTION

(i) $0.25 = (0.25 \times 100)\% = 25\%$

(ii) $0.06 = (0.06 \times 100)\% = 6\%$

(iii) $0.89 = (0.89 \times 100)\% = 89\%$

(iv) $0.17 = (0.17 \times 100)\% = 17\%$

-:2.3:-

Express following percents as fractions.

i) 50% **ii) 25%** **iii) 16%** **iv) 230%**
v) 87½% **vi) 20%** **vii) 4%** **viii) 99%**

SOLUTION

(i) $$50\% = \frac{50}{100} = \frac{1}{2}$$

(ii) $$25\% = \frac{25}{100} = \frac{1}{4}$$

(iii) $$16\% = \frac{16}{100} = \frac{4}{25}$$

(iv) $$230\% = \frac{230}{100} = \frac{23}{10}$$

(v) $$87\frac{1}{2}\% = \frac{175}{2}\% = \frac{175}{100} = \frac{7}{8}$$

(vi) $$20\% = \frac{20}{100} = \frac{1}{5}$$

(vii) $$4\% = \frac{4}{100} = \frac{1}{25}$$

(vii) $$99\% = \frac{99}{100}$$

-:2.4:-

Express these percents as decimals.

i) 15% **ii) 85%** **iii) 12½%** **iv) 6¼%**

SOLUTION

(i) $$15\% = \frac{15}{100} = 0.15$$

(ii) $$85\% = \frac{85}{100} = 0.85$$

(iii) $$12\frac{1}{2}\% = \frac{25}{2}\% = \frac{25}{2 \times 100} = 0.125$$

(iv) $$6\frac{1}{4}\% = \frac{25}{4}\% = \frac{25}{4 \times 100} = 0.625$$

-:2.5:-

Find **a) 5% of 200** **b) 6% of 180** **c) 12% of 15**
d) 23% of 4500 **e) 85% of 400** **f) ¾% of 2000**

SOLUTION

(a) 5% is the rate and 200 is the base.

Thus percentage = Base x Rate%

$$= \frac{200 \times 5}{100} = 10$$

(b) 6% is the rate and 180 is the base.

Thus percentage = Base x Rate%

$$= \frac{\text{Base} \times \text{Rate}}{100} = \frac{180 \times 6}{100} = 10.8$$

c) 12% is the rate and 15 is the base

Thus percentage = Base x Rate%

$$= \frac{\text{Base} \times \text{Rate}}{100} = \frac{15 \times 12}{100} = \frac{180}{100} = 1.80$$

(d) 23% is the rate and 4500 is the base

Thus percentage = Base x Rate%

$$= \frac{\text{Base} \times \text{Rate}}{100} = \frac{4500 \times 23}{100} = 1035$$

(e) 85% is the rate and 400 is the base.

Thus percentage = Base x Rate%

$$= \frac{\text{Base} \times \text{Rate}}{100} = \frac{400 \times 85}{100} = 340$$

(f) ¾% is the rate and 2000 is the base.

Thus percentage = Base x Rate%

$$= \frac{\text{Base} \times \text{Rate}}{100} = \frac{2000 \times 3}{100 \times 4} = 15$$

-:2.6:-

If 5% of a number is 60, what is the number?

SOLUTION

$$\text{Number} = \frac{\text{Percentage of the Number}}{\text{Rate\%}}$$

$$\text{Number} = \frac{\text{Percentage of the Number} \times 100}{\text{Rate}}$$

Here percentage of number = 60, Rate % = 5% = 0.05

$$\text{Number} = \frac{60 \times 100}{5} = 1200$$

-:2.7:-

If ½% of a number is 82.46, what is the number?

SOLUTION

$$\text{Number} = \frac{\text{Percentage of the Number} \times 100}{\text{Rate}}$$

Percentage of the number = 82.46

Rate = ½%

$$\text{Number} = \frac{82.46 \times 100}{\frac{1}{2}} = 164.92 \times 100 = 16492$$

-:2.8:-

If 45% of number is 3000, what is the number?

SOLUTION

Here percentage of a number = 300; Rate% = 45%

$$\text{Number} = \frac{\text{Percentage of the Number} \times 100}{\text{Rate}}$$

$$= \frac{3000 \times 100}{45} = \frac{20000}{3} = 6666.67$$

-:2.9:-

Mr. Khalid bought a radio for Rs. 1200 and he sold it for Rs. 1425. Find his percent profit.

SOLUTION

Selling price of radio = Rs. 1425

Purchased price = Rs. 1200

Profit = Selling Price - Purchase price

= Rs. 1425 - Rs. 1200= Rs. 225

Here Rs. 225 is the number for which percent (Rate) is required on the base of Rs. 1200.

Percent profit = Rate%

$$\text{Rate\%} = \frac{\text{Number}}{\text{Base}} = \frac{225}{1200} = 18\frac{3}{4}\%$$

-:2.10:-

Mr. Noor Muhammad gets 15% profit from his investment. He gets Rs. 400 as net profit, find his investment.

SOLUTION

Rate % = 15%

Percentage of profit = Rs. 400

Investment = Amount

$$\text{Amount of Investment} = \frac{\text{Percentage of Profit}}{\text{Rate\%}}$$

$$= \frac{\text{Rs. } 400 \times 100}{15} = \frac{8000}{3} = 2666.67$$

-:2.11:-

Of the 80,000 seats in the football stadium 48640 were filled. What percent of the stadium was filled.

SOLUTION

Here 48640 is the number for which percent (rate) is required on the base 80000.

$$\text{Percent} = \text{Rate \%} = \frac{\text{Number}}{\text{Base}} = \frac{48640}{80000} = 60.8\%$$

-:2.12:-

If your automobile payments are Rs 300, a month, what percent of year Rs. 5000 per month salary must be set a side to pay for your automobile.

SOLUTION

Here 300 is the number for (rate) is required on the base 5000.

$$\text{Percent} = \text{Rate \%} = \frac{\text{Number}}{\text{Base}} = \frac{300}{5000} = \frac{3}{50} = 6\%$$

-:2.13:-

About 70% of wheat can be converted into flour. To the nearest kg, how many kg of wheat are needed to make 100 kg of flour.

SOLUTION

Here rate % of wheat converted into flour is 70%

Percentage = 100 kg

We have to find to total wheat i.e. Base

$$\text{Base} = \frac{\text{Percentage}}{\text{Rate \%}} = \frac{\text{Percentage} \times 100}{\text{Rate}}$$

$$= \frac{100 \times 100}{70} = \frac{10000}{70} = 142.857 = 143 \text{ kg}$$

-:2.14:-

A man paid zakat of Rs. 312.50 at the rate of 2½ % p.a. of his wealth. What is the value of his wealth?

SOLUTION

Here total zakat paid = Percentage = Rs. 312.50

Rate = 2½ % = $^5/_2$%

We have to find his wealth i.e. Base

$$\text{Total Wealth} = \text{Base} = \frac{\text{Percentage}}{\text{Rate \%}}$$

$$= \frac{\text{Percentage} \times 100}{\text{Rate}} = \frac{312.50 \times 100 \times 2}{5} = \text{Rs. } 12500$$

-:2.15:-

The selling price of a steal cabinet is Rs. 840, and the gross profit is 10% of the cost. Find the cost.

SOLUTION

The cost is the base from which gross profit of 10% has been calculated.

The given selling price = Cost + Gross profit

= 100 + 10 = 110% of Cost

Since Rs. 840 is 110% of the cost. the Cost is

$$\text{Cost} = \frac{840}{110\%} = \frac{840 \times 100}{110} = \text{Rs. } 763.63$$

-:2.16:-

Find the selling price of typewriter which costs Rs. 4000 and the mark up is 8%.

SOLUTION

Here cost of type writer = C = 4000: Mark up percent = R = 8%

We have

$$S = C(1+R)$$
$$S = 4000(1 + 0.08)$$
$$S = 4000(1.08)$$
$$S = \text{Rs. } 4320.00$$

-:2.17:-

A man sold a fountain pen for Rs. 125. his profit was 30% of his original purchase price. What was his purchase price?

SOLUTION

Here selling price of fountain pen =S= Rs. 125

Rate of profit = 30%

Purchase price = Cost price = C

$$S = C(1+R)$$
$$125 = C(1 + 0.30)$$
$$125 = 1.30\,C$$
$$\text{Cost} = \frac{125}{130} = \text{Rs. } 96.15$$

So price of fountain pen is Rs. 96.15

-:2.18:-

What is the cost of coloured SONY TV. set which is sold for Rs. 9800, if the percent mark up is 40% on cost.

SOLUTION

We have $S = C(1 + R)$

Here $S = \text{Rs. } 9800$ and

Percent mark up = R = 40%

$9800 = C(1 + 0.40)$

$9800 = 1.40C$

$$\text{Cost} = \frac{9800}{1.40} = \frac{980000}{140} = \text{Rs. } 7000$$

-:2.19:-

After a mark up of 25% on sales a watch is sold for Rs. 1000.

i) What is its cost price.

ii) What is the percent mark up on sales if the cost price of watch have been Rs. 700.

SOLUTION

Here

Mark up percent on sale P = 25%= 0.25

Selling price of watch = S = Rs. 1000

(i) We know that

Cost =C= S(1 - P)

C = 1000(1-025)

C = 1000(0.75)

C = Rs. 750

(ii) Cost of watch = C = Rs. 700

Selling price = S = Rs. 1000

C = S(1 - P)

700 = 1000(1 - P)

700 = 1000 - 1000P

1000P = 1000 - 700

1000P = 300

P = 0.30

P = 30 %

Hence mark up on sale = 30%

-:2.20:-

A and B together invest Rs. 52000 in a small business. A's share of investment is 36% of this amount. Find out B's investment in this business.

SOLUTION

Total investment = Rs. 52000

Let the total investment = Rs. 100

A's share of investment = Rs. 36 = 36%

B's share of investment = Rs. 64 = 64%

B's amount of investment = Total investment x Rate %

$$= \frac{\text{Total Investment} \times \text{Rate}}{100}$$

$$= \frac{52000 \times 64}{100} = \text{Rs. } 33280$$

-:2.21:-

Last month a store's sales were Rs. 25000 and this month the sales are Rs. 45230. Find out the percentage increase in sales.

SOLUTION

Last month's sale = Rs. 25000

Sale of this month = Rs. 45230

Increase = Rs. 45230 - Rs. 25000

= Rs. 20230

$$\text{Percentage Increase} = \frac{20230 \times 100}{2500} = 80.92\%$$

-:2.22:-

Sultan Ahmad purchased merchandise for Rs. 7500. He was allowed a trade discount of 7%. Find the amount of discount.

SOLUTION

Here Total price = Rs. 7500

Rate of discount = 7%

$$\text{Amount of Discount} = \frac{\text{Total Price} \times \text{Rate of Discount}}{100}$$

$$= \frac{7500 \times 7}{100} = \text{Rs. } 525$$

-:2.23:-

Mr. Naveed purchase 50 books of Economics from Kitab Markaz Faisalabad. The printed price of each book is Rs. 35.00. if a trade discount of 15% is allowed to him find the discount and net price of the books.

SOLUTION

Printed price of a book = Rs. 35.00

Printed price of 50 books = Rs. 1750.00

Trade discount = 15%

$$\text{Amount of Discount} = \frac{\text{Total Price} \times \text{Rate of Discount}}{100}$$

$$= \frac{1750 \times 15}{100} = \frac{26250}{100} = \text{Rs. } 262.50$$

Net price of the book = Price-Total discount
= Rs. 1750.00 - Rs. 262.50
= Rs. 1487.50

-:2.24:-

A man paid Rs. 555 for a radio set after 7½% discount had been deducted. What was the market price of the set.

SOLUTION

Net price = Rs. 555

Rate of discount = 7½%

Let the marked price of radio = Rs. 100

Discount = Rs. 7.50

Net price of radio = Rs. 92.50

If net price is Rs. 92.50 the market price =100

If net price is Rs. 555 the market price =

$$\frac{100 \times 555}{92.50} = \frac{10000 \times 555}{92.50} = \text{Rs. } 600$$

-:2.25:-

On the purchase of a car the dealer allowed to a customer discount at the rate of 4½%. Find out the total price of a car and amount paid to dealer, if the discount allowed was Rs. 6000.

SOLUTION

Discount allowed = Rs. 6000

Rate of discount = 4½%

Total price of car

$$\text{Total Price} = \frac{\text{Discount} \times 100}{\text{Rate of Discount}}$$

$$= \frac{6000 \times 100 \times 2}{9} = \text{Rs. } 133333.33$$

Total Discount = 6000

Amount paid to the Dealer = Rs. 133333.33 – Rs. 6000
= Rs. 127333.33

-:2.26:-

A T-shirt marked at Rs. 145 was sold for Rs. 100 in a clearance sale. Find the rate of discount.

SOLUTION

Marked price of T-Shrit = Rs. 145

Selling price = Rs. 100

Discount = Rs. 45

$$\text{Rate of Discount} = \frac{\text{Discount} \times 100}{\text{Price}}$$

$$= \frac{45 \times 100}{145} = 31\frac{1}{29}\%$$

-:2.27:-

A furniture dealer paid Rs. 10,000 for 50 lawn chairs on which he had been given discount of 12%. Find the price of a lawn chair.

SOLUTION

Net price of 50 lawn chairs = Rs. 10,000

Net price of one lawn chair = Rs. 200

Let the list price of a lawn chair = Rs. 100

Discount at 12% = Rs. 12

Net price = Rs. 88

If net price is Rs. 88, marked price = Rs. 100

If net price is Rs. 200, marked price

$$= \frac{100 \times 200}{88} = \frac{2500}{11} = \text{Rs. } 227.27$$

-:2.28:-

Mr. Zahoor allows 10% trade discount and 3% cash discount. Find the net amount be paid, if the marked price of a cooler is Rs. 13500.

SOLUTION

Marked price = Rs. 13500

Less 10% trade discount on Rs. 13500 = Rs. 1350

3% cash discount as Rs. 12150 = Rs. 364.50

Total trade and cash discount

= Rs. 1350 + Rs. 364.50 = Rs. 1740.50

Net amount = Rs. 13500 - Rs. 1714.50 =Rs.11785.50

-:2.29:-

A house was sold for Rs. 78,350. The property dealer was allowed a commission of 2%. Find out his commission.

SOLUTION

Total price of house = Rs. 78350

Rate of commission = 2%

$$\text{Commission} = \frac{\text{Total Price} \times \text{Rate}}{100}$$

$$= \frac{78350 \times 2}{100} = \text{Rs. } 1567$$

-:2.30:-

A widow has rented out her property at Rs. 4500 pm. An income of Rs. 30000 pa is tax exempted. Calculate property tax on the balance of here income at a rate of 10%.

SOLUTION

The per month rent = Rs. 4500

Income of a year = 4500 x 12 = Rs. 54000

Exempted income = Rs. 30000

Balance = Rs. 24000

Property tax rate = 10%

Here Base = Rs. 24000

$$\text{Tax} = \text{Base} \times \text{Rate}\,\% = \frac{\text{Base} \times \text{Rate}}{100}$$

$$= \frac{24000 \times 10}{100} = \text{Rs. } 2400$$

-:2.31:-

A salesman is paid a salary of Rs. 500 a month and 1% commission on sales. If his total income in one month is Rs. 750, find the value of his sales in that month.

SOLUTION

Total income of Saleman = Rs. 750

Salary = Rs. 500

Amount of commission = Rs. 250

$$\text{Sales for the Month} = \frac{250 \times 100}{1} = \text{Rs. } 25000$$

-:2.32:-

At 5% rate of commission, Miss Nelson, a sales girl got Rs. 250 on the sale of talcum face powder. Find the value of her sales. If the price of face powder was Rs. 2.50 per container, how many containers did she sell?

SOLUTION

Miss Nelson get Rs. 5 when the sale is for Rs. 100. She gets total commission Rs. 250.

$$\text{Total Sale} = \frac{250 \times 100}{5} = \text{Rs. } 5000$$

Price of a container = Rs. 2.50

$$\text{The number of container she sells} = \frac{5000}{2.50} = 2000 \text{ Containers}$$

-:2.33:-

Find the total amount of commission on sale to Rs. 8000, if the commission rate is 8%.

SOLUTION

Total sale = Rs. 8000

Rate of commission = 8%

$$\text{Total amount of Commission} = \frac{\text{Total Sale} \times \text{Rate}}{100}$$

$$= \frac{8000 \times 8}{100} = \text{Rs. } 640$$

SET – B

-:2.1:-

Jamal's salary is subject to 16% payroll deduction. Calculae his take home pay for a month if his monthly salary is Rs. 8500.

SOLUTION

Jamal's Monthly Pay = Rs. 8500

Payroll Deduction = 16%

Here Base = Rs. 8500 & Rate% = 16%

We are looking to find take home pay, that is pay after payroll deduction.

$$\text{Deduction} = \text{Percentage} = \text{Base} \times \text{Rate\%}$$

$$= 8500 \times 16\%$$

$$= 8500 \times \frac{16}{100} = 8500 \times 0.16 = \text{Rs.}1360$$

Hence Take Home Pay = Rs. 8500 – Rs. 1360 = Rs. 7140

-:2.2:-

Ahmad plans to buy a house that costs Rs. 450,000. If he must make a down payment of 15%, how much will the down payment be?

SOLUTION

Here Cost of House = Base = Rs. 4,50,000

Rate% = Rate of down Payment = 15%

Amount of Down Payment = Percentage = Base × Rate%

$$= 450000 \times 15\%$$

$$= 450000 \times \frac{15}{100} = 450000 \times 0.15$$

$$= \text{Rs.}67500$$

-:2.3:-

Zahid plans to buy a new car that costs Rs. 6,50,000. The dealer requires a down payment of 20%. How much will the down payment be?

SOLUTION

Cost of New Car = Base = Rs. 6,50,000

Rate of Down Payment = Rate% = 20%

Amount of Down Payment = Percentage = Base × Rate%

$$= 650000 \times 20\%$$

$$= 650000 \times \frac{20}{100} = 650000 \times 0.20$$

$$= \text{Rs.}1{,}30{,}000$$

-:2.4:-

Monica wants to buy a new refrigerator that cost Rs. 12500. She must pay 12% down payment. How much she will pay?

SOLUTION

Cost of New Refrigerator = Base = Rs. 12,500

Rate of Down Payment = Rate% = 12%

Amount of Down Payment = Percentage = Base × Rate%

$$= 12500 \times 12\%$$

$$= 12500 \times \frac{12}{100} = 12500 \times 0.12$$

$$= \text{Rs.}1500$$

-:2.5:-

It is estimated that 5% fruit will be damaged during transportation. In a consignment of 7200 pounds how many pounds of usable fruit are there?

SOLUTION

Total Fruit of Consignment = Base = 7200 lbs

Rate of Damaged Fruit = Rate% = 5%

Amount of Damaged Fruit = Percentage = Base × Rate%

$$= 7200 \times 5\%$$

$$= 7200 \times \frac{5}{100} = 7200 \times 0.05 = 360 \text{ lbs}$$

Hence The Amount of Fruit Usable = Total Fruit – Damaged Fruit

$$= 7200 - 360 = 6840 \text{ lbs}$$

OR

We know that Total Fruit = 7200 lbs

If 5% is damaged fruit then usable fruit is 95%

Now Here Base = 7200 lbs & Rate% = 95%

Total Usable Fruit = Base × Rate%

$$= 7200 \times 95\%$$

$$= 7200 \times \frac{95}{100} = 7200 \times 0.95$$

$$= 6840 \text{ lbs}$$

-:2.6:-

A whole seller allows customers 2% discount for payment within 30 days. How much cash will be received from customer's bill of Rs. 5092 paid within 25 days.

SOLUTION

Rate of Discount = 2% & Base = Rs. 5092

Amount of Discount = Base × Rate%

$$= 5092 \times 2\%$$

$$= 5092 \times \frac{2}{100} = 5092 \times 0.02$$

$$= \text{Rs.}101.84$$

Cash Received from Customer = Total Bill - Discount

= Rs. 5092 – 101.84 = Rs. 4990.16

-:2.7:-

A dress company determines the selling price of its dresses by adding 35% to the cost. Calculate the selling price of a garment that cost Rs. 435.

SOLUTION

Cost Price of Garment = Base = Rs. 435

Rate of Increase = Rate% = 35%

Selling Price = Cost Price + Increase

Increase = Percentage = Base × Rate%

$$= 435 \times 35\%$$

$$= 435 \times \frac{35}{100} = 435 \times 0.35 = \text{Rs.}152.25$$

Hence Selling Price = Rs. 435 + Rs. 152.25 = Rs. 587.25

OR

If we want 35% increase then selling price will be 135% of cost We can calculate as follows:

Base = Rs. 435 & Rate% = 135%

Hence

$$\text{Seling Price} = \text{Base} \times \text{Rate\%}$$
$$= 435 \times 135\%$$
$$= 435 \times \frac{135}{100} = 435 \times 1.35 = \text{Rs.}587.25$$

-:2.8:-

A batch of goods was damaged during production. These goods were sold at 43% below cost. What was the selling price if the cost was Rs. 948790?

SOLUTION

Here Cost = Base = Rs. 9,48,790

Reduced Rate% due to Damaged Goods = 43%

$$\text{Amount of Deduction} = \text{Percentage} = \text{Base} \times \text{Rate\%}$$
$$= 948790 \times 43\%$$
$$= 948790 \times \frac{43}{100} = 948790 \times 0.43$$
$$= \text{Rs.}540810.30$$

Selling Price = Total Cost – Amount of Deduction

= Rs. 948790 – Rs. 407979.70 = Rs. 540810.30

OR

As Reduced Rate% is 43%, so Rate of Selling Price = 57% of Cost

Hence

$$\text{Selling Price} = \text{Base} \times \text{Rate\%}$$
$$= 948790 \times 57\%$$
$$\text{Selling Price} = 948790 \times \frac{57}{100} = 948790 \times 0.57$$
$$= \text{Rs.}540810.30$$

-:2.9:-

A telephone bill reads as follows:

Line Rent ..... Rs. 174

Local call charges @ Rs. 2 per unit for 73 units.....Rs.
Sales tax @ 14% of local call charges .....Rs.
With holding tax @ 2.7% of local call charges.....Rs.
Calculate the bill.

SOLUTION

Here

Line Rent	Rs. 174.00
Local Call Charges @2 per unit for 73 Units	Rs. 176.00
Sale Tax @14% of local call charges	Rs. 24.64
W. H. Tax @2.7% of local call charges	Rs. 4.75
Total Bill	**Rs. 379.39**

-:2.10:-

IESCO electricity consumer bill reads as follows:
The rate of first 100 units consumed is Rs. 2.474 and rate of units over and above 100 units is Rs. 3.371. The total number of units consumed is 221.
Total cost of electricity Rs.
G.S.T @ 15% of total cost Rs.
PTV fee Rs. 25 Rs.
Current Bill Rs.
Less subsidy @ 14.52 on current bill Rs.
Bill payable within due date Rs.
Late payment surcharge @ 10% on bill payable Rs.
G.S.T on late payment surcharge @ 15% Rs.
Bill payable after due date Rs.
Calculate bill payable within due date and bill payable after due date.

SOLUTION

First of all do the bill calculations as follows:

For first 100 units @ 2.474 per unit	Rs. 247.40
For remaining 121 units @ 3.371 per unit	Rs. 407.80
Total Cost of Electricity	Rs. 655.29
G.S.T @ 15% of Total Cost	Rs. 98.29
P.T.V. Fee Rs. 25	Rs. 25.00
Current Bill	Rs. 778.58
Less Subsidy @ 14.52% on Current Bill	Rs. 130.05
Bill Payable within due Date	**Rs. 648.53**

Late Payment Surcharge @10% on Bill Payable ------- Rs. 64.85
G.S.T. on Late Payment Surcharge @ 15% ---------- Rs. 9.73
Bill Payable after due Date ---------- Rs. 723.11

-:2.11:-

Of the gross sales of Rs. 4,26,529, 12% were returned. Calculate the next sales.

SOLUTION

Here Total Sale = Base = Rs. 4,26,529
Returned = Rate% = 12%
Total Amount Returned = Percentage = Base × Rate%

$$= 426529 \times 12\%$$

$$= 426529 \times \frac{12}{100} = 426529 \times 0.12$$

$$= \text{Rs. } 51183.48$$

Net Sales = Total Sales – Returned
= Rs. 426529 – Rs. 51183.48 = Rs. 375345.52

OR

When 12% returned, then net sales is 88%
Here Base = Rs. 426529 & Rate% = 88%
Net Sales = Base × Rate%

$$= 426529 \times 88\%$$

$$= 426529 \times \frac{88}{100} = 426529 \times 0.88 = \text{Rs. } 375345.52$$

-:2.12:-

Afzal setout 255 questions and got 204 back. What percent of the questionnaires was returned?

SOLUTION

Here Base = 255 questions & Percentage = 204
We are looking to find Rate%

$$\text{Rate\%} = \frac{\text{Percentage}}{\text{Base}} = \frac{204}{255} = 0.8 = 80\%$$

-:2.13:-

Ali set 120 eggs to hatch, and 114 hatched out. What percent of egg hatched out?

SOLUTION

Here Base = 120 eggs; Percentage = 114 eggs & Rate% = ?

$$\text{Rate\%} = \frac{\text{Percentage}}{\text{Base}} = \frac{114}{120} = 0.95 = 95\%$$

-:2.14:-

Sadaf bought 288 ball points pens and 18 of them would not write. What percent of the pen was faulty?

SOLUTION

Total Ball Point Pen = Base = 288

Faulty Pen = Percentage = 18

$$\text{Rate\%} = \frac{\text{Percentage}}{\text{Base}} = \frac{18}{288} = 0.0625 = 6.25\%$$

So 6.25% pens are faulty.

-:2.15:-

A worker received wages of Rs. 2500 in the month of June. He received wages of Rs. 2700 in the month of July. What is the rate of increase?

SOLUTION

The Wages in the month of June = Rs. 2500

The Wages in the month of July = Rs. 2700

Total Increase = Rs. 2700 – Rs. 2500 = Rs. 200

Here Base = Rs. 2500; Percentage = Rs. 200 & Rate% = ?

$$\text{Rate\%} = \frac{\text{Percentage}}{\text{Base}} = \frac{200}{2500} = 0.08 = 8\%$$

Hence Wages Increase by 8%

-:2.16:-

A producer raised 20000 bales of cotton last year. He raised 24000 bales for this year. Calculate the percent increase in production.

SOLUTION

Here Last Year's Production = 20,000 bales

This Year's Production = 24,000 bales

Increase in Production = 4000 bales

Here Base = 20000; Percentage = 4000 & Rate% = ?

$$\text{Rate\%} = \frac{\text{Percentage}}{\text{Base}} = \frac{4000}{20000} = 0.20 = 20\%$$

-:2.17:-

A whole sale fruit dealer bought a carload of mangoes weighing 2758 kgs. After shorting, it was discovered that 217 kgs were spoiled. Find the percent of spoiled mangoes.

SOLUTION

Total Fruit = Base = 2758 kgs of mango

Amount of Spoiled = Percentage = 217 kgs

We want to find Rate% of Spoiled Fruit.

$$\text{Rate\%} = \frac{\text{Percentage}}{\text{Base}} = \frac{217}{2758} = 0.0787 = 7.87\%$$

-:2.18:-

Give the percent of total floor space allocated to each department.

Department	Floor Space	Percent of Floor Space
A	16,000 sq.ft	_____
B	20,000 sq. ft	_____
C	28,000 sq.ft	_____

SOLUTION

First compute the total floor space of the building:

16000 + 20000 + 28000 = 64000 sq ft

Now find the percent of the total that each department occupies:

Department	Floor Space	Percent of Floor
A	16000 sq ft	$\frac{16000}{64000} = 0.25 = 25\%$
B	2000 sq ft	$\frac{20000}{64000} = 0.3125 = 31.25\%$
C	28000 sq ft	$\frac{28000}{64000} = 0.4375 = 43.75\%$

-:2.19:-

Allocate a utility cost of Rs. 4,50,000 for the building just described in question 2.18.

SOLUTION

Here we allocate a utility cost Rs. 450000 for the building to different departments according to their percent.

A

$$25\% \text{ of } 450000 = \frac{25}{100} \times 450000 = 0.25 \times 450000$$
$$= \text{Rs.}112500$$

B

$$31.25\% \text{ of } 450000 = \frac{31.25}{100} \times 450000 = 0.3125 \times 450000$$
$$= \text{Rs.}140625$$

C

$$43.75\% \text{ of } 450000 = \frac{43.75}{100} \times 450000 = 0.4375 \times 450000$$
$$= \text{Rs.}196875$$

-:2.20:-

The family budget is as follows:

Food ..... Rs. 10000
Utilities..... Rs. 6000
Education ..... Rs. 3500
Clothing..... Rs. 2000
Other expenses..... Rs. 4500

Calculate the percent that each expenditure bears to the total budget.

SOLUTION

First of all calculate the total budget of family.

Food	= Rs. 10000
Utility	= Rs. 6000
Education	= Rs. 3500
Clothing	= Rs. 2000
Other Expenses	= Rs. 4500
Total	**= Rs. 26000**

Now we find percent of each expenditure.

$$\text{Rate\%} = \frac{\text{Percentage}}{\text{Base}}$$

$$\text{Food} = \frac{10000}{26000} = 0.3846 = 38.46\%$$

$$\text{Utility} = \frac{6000}{26000} = 0.2308 = 23.08\%$$

$$\text{Education} = \frac{3500}{26000} = 0.1346 = 13.46\%$$

$$\text{Clothing} = \frac{2000}{26000} = 0.0769 = 7.69\%$$

$$\text{Other Expenses} = \frac{4500}{26000} = 0.1731 = 17.31\%$$

-:2.21:-

Pick quick collected Rs. 5896 in sales tax in March with a tax rate of 5 ½%. What were the total sales for March?

SOLUTION

Here Percentage = Total Tax Collected = Rs. 5896

Rate% = 5 ½% = 5.50%

Base = Total Sales = ?

$$\text{Rate\%} = \frac{\text{Percentage}}{\text{Base}}$$

$$= \frac{5896}{5.5\%} = \frac{5896 \times 100}{5.5} = \frac{5896 \times 1000}{55} = \text{Rs.}107200$$

-:2.22:-

Imtiaz is a real estate sales man and earns 3% of his total sales. What

a) level of sales will give him an income of Rs. 18000 per month.

b) level of sales will Imtiaz need if he wishes monthly income of Rs. 25000?

SOLUTION

(a) Rate% = 3%; Percentage = Income per month = Rs. 18000

$$\text{Level of Sales} = \text{Base} = \frac{\text{Percentage}}{\text{Rate\%}}$$

$$= \frac{18000}{3\%} = \frac{18000 \times 100}{3} = \text{Rs. } 600000$$

(b) Rate% = 3%, Percentage = Income per month = Rs. 25000

$$\text{Level of Sales} = \text{Base} = \frac{\text{Percentage}}{\text{Rate\%}}$$

$$= \frac{25000}{3\%} = \frac{25000 \times 100}{3} = \text{Rs. } 833333.33$$

-:2.23:-

In analyzing the sizes sold in the men's shoe department, a store found that 1000 pairs of shoes size 7 ½ were sold. This was 8% of the total shoe sales. What was the total number of pairs sold?

SOLUTION

Here Rate% = 8%;

Percentage = No of pairs of shoes of size 7 ½ = 1000 pairs

$$\text{Base} = \frac{\text{Percentage}}{\text{Rate\%}}$$

$$= \frac{1000}{8\%} = \frac{1000 \times 100}{8} = \frac{100000}{8} = 12500$$

Total No of Pair of Shoes Sold = 12500 pairs of shoes

-:2.24:-

If the sales tax rate is 2% of the sales and the amount of tax paid for the month was Rs. 804.95, calculate the month's sales.

SOLUTION

Here Percentage = The amount of tax paid = Rs. 804.95

Rate% = 2%

Base = Total Sales for the month

$$\text{Base} = \frac{\text{Percentage}}{\text{Rate\%}}$$

$$= \frac{804.95}{2\%} = \frac{804.95 \times 100}{8} = \frac{80495}{2} = \text{Rs. } 40247.5$$

-:2.25:-

A metal alloy contains 62.8 pounds of zinc. This is 6.5% of the total weight of the alloy. What is the total weight.

SOLUTION

Percentage of Zinc = 62.8 pounds

Rate% = 6.5%

Requirement is to find total weight of Alloy, that is; Base

$$\text{Base} = \frac{\text{Percentage}}{\text{Rate\%}}$$

$$= \frac{62.8}{6.5\%} = \frac{62.8 \times 100}{6.5} = \frac{62800}{65} = 966.154 \text{ pounds}$$

-:2.26:-

Ali's payroll deduction for one month came to Rs. 5234, whish was 15% of his total salary. Calculate his gross pay.

SOLUTION

Amount of Payroll Deduction = Percentage = Rs. 5234

Rate% of Deduction = 15%

$$\text{Base} = \text{Gross Pay} = \frac{\text{Percentage}}{\text{Rate\%}}$$

$$= \frac{5234}{15\%} = \frac{5234 \times 100}{15} = \frac{523400}{15} = \text{Rs. } 34893.33$$

-:2.27:-

In paying an invoice of Rs. 13345, the customer is entitled to deduct 15% for damages and 18% of the balance for prompt payment. Calculate the cash required to settle the bill.

SOLUTION

Base = Paying Invoice = Rs. 13345

Rate% of Deduction for Damages = 15%

Amount of Deduction = Percentage = Base × Rate%

$$= 13345 \times 15\% = 13345 \times \frac{15}{100}$$

$$= 13345 \times 0.15 = \text{Rs. } 2001.75$$

Balance = Invoice – Deduction

= Rs. 13345 – Rs. 2001.75 = Rs. 11343.25

Rate of Deduction for Prompt Payment for Balance = 18%

Amount of Deduction = 18% of 11343.25

$= 11343.25 \times 0.18\% = \text{Rs. } 2041.785$

Hence The amount of Cash to Settle the Bill

= Rs. 11343.25 – Rs. 2041.785 = Rs. 9301.465

-:2.28:-

A family spend 30% on rent 25% on food and 12% on utilities. The family spend Rs. 3800.35 on utilities. Calculate the gross income of family.

SOLUTION

Family's Expenditure on:

Rent = 30%

Food = 25%

Utilities = 12%

Amount of Expenditure on Utilities = Rs. 3800.35

Which is the Percentage and Rate% of Utilities is 12%

Hence

$$\text{Gross Income of Family} = \text{Base} = \frac{\text{Percentage}}{\text{Rate\%}}$$

$$= \frac{3800.35}{12\%} = \frac{804.95 \times 100}{12} = \frac{380035}{12}$$

$$= \text{Rs. } 31669.583$$

-:2.29:-

Daood bought 250 shares of stock at a total Rs. 4850. After six months, the stock declined in value by 15.125%. What was the stock worth after the decline?

SOLUTION

Here Total Worth before Decline = Rs. 4850

Decline (Decrease) = 15.125%

Amount of Decrease = Percentage = Base × Rate%

$$= 4850 \times 15.125\% = 4850 \times \frac{15.125}{100}$$

$$= 4850 \times 0.15125 = \text{Rs. } 733.5625$$

Stock Worth after 6 month = Rs. 4850 – Rs. 733.5625
= Rs. 4116.4375

OR

Total Worth = Rs. 4850
Decline = 15.125%
Worth rate% after 6 month = (100 – 15.125)% = 84.875%
Stock Worth after six months
= 84.875% of 4850 = 0.8750 × 4850 = Rs. 4116.4375

-:2.30:-

Last year, the net income of ABC Corporation decreased by 4.351% from its previous high of Rs. 8,868,472. How much did the company earn last year?

SOLUTION

Net Income of Previous Year than Last Year = Rs. 8,867.8462
Decrease in Last Year = 4.351%
Income of Last Year is as follows:
= (100 – 4.351)% of 8,86,78,472 ⇒ 95.649% of 8,86,78,472
= 0.95649 × 8,86.78,472 = Rs. 84820071.68

-:2.31:-

Mr. Kaleem's present salary is Rs. 34000 and he receives a 8% increase. What is his new salary?

SOLUTION

Present Salary of Kaleem = Rs. 34,000
Increase = 8%
New Salary = (100% + 8%) of 34000

$$= (108)\% \text{ of } 34000 = \frac{108}{100} \times 34000 = \text{Rs. } 36720$$

-:2.32:-

Fazal Enterprises reduces the price of its Rs. 24000 printer by 12%. What is the new price?

SOLUTION

Old Price of Printer = Rs. 24,000
Reduced Rate% = 12%

New Price of Printer is as follows:
$= (100\% - 12\%)$ of 24000

$$= 88\% \text{ of } 24000 = \frac{88}{100} \times 24000 = 0.88 \times 24000 = \text{Rs. } 21120$$

-:2.33:-

Style and Smile Electronics reduces the price of its monitors from Rs. 3500 to Rs. 3000. What is the percent of decrease?

SOLUTION

Old Price of Monitors = Rs. 3500
New Price of Monitors = Rs. 3000
Reduction = Percentage = Rs. 500
Base = 3500

$$\text{Reduced Rate\%} = \frac{\text{Percentage}}{\text{Base}} = \frac{500}{3500} = 0.142857 = 14.2857\%$$

-:2.34:-

The population of a town increased from 28600 to 31317. What is the percent of increase?

SOLUTION

Old Population of Town = 28600
Present Population of Town = 31317.
Increase = Percentage = 2717
Base = 28600

$$\text{Increased Rate\%} = \frac{\text{Percentage}}{\text{Base}} = \frac{2717}{28600} = 0.095 = 9.5\%$$

-:2.35:-

The retail cost of a microcomputer is Rs. 20000 which is 12% over the dealer's cost. What is the dealer's cost?

SOLUTION

Since

Retail Cost of Micro Computer = Rs. 20,000; is 12% more than the Dealer's Cost. The Question is Rs. 20,000 is 112% of What? That is to find the base.

$$\text{Dealer's Cost} = \frac{\text{Percentage}}{\text{Rate\%}} = \frac{20000}{112\%} = \frac{20000 \times 100}{112} = \text{Rs.}17857.14$$

-:2.36:-

A book sells for Rs. 39.95, which is 20% over cost. What is the cost of the book to the book store?

SOLUTION

Since

The Selling Price of Book = Rs. 29.95 is 20% more than cost price.

Here, we are looking for Rs. 29.95 is 120% of What? That is to find the Base

$$\text{Cost Price of Book} = \text{Base} = \frac{\text{Percentage}}{\text{Rate\%}}$$

$$= \frac{29.95}{120\%} = \frac{29.95 \times 100}{120} = \frac{2995}{120} = \text{Rs. } 2496$$

-:2.37:-

An electric drill is offered for Rs. 1204, which is 14% of the regular price. What is the regular price?

SOLUTION

This is the problem to find Base:

We have Rs. 1204 is 86% of What?

So

$$\text{Regular Price} = \frac{\text{Percentage}}{\text{Rate\%}}$$

$$= \frac{1204}{86\%} = \frac{1204 \times 100}{86} = \frac{120400}{86} = \text{Rs.}1400$$

-:2.38:-

Tariq, a commission agent, was paid one month as follows:

Rs. 320 on sales at the rate of 3%

Rs. 430 on sales at the rate of 5%

Rs. 236.13 on sales at the rate of 6%

Find the total that Tariq sold that month.

SOLUTION

Amount of Commission (Percentage)	Rate%	Sales (Base)
Rs. 320	3%	Rs. 10666.67
Rs. 430	5%	Rs. 8600.00
Rs. 236.13	6%	Rs. 3935.50
	Total Sales	**Rs. 23202.17**

-:2.39:-

Zafar a wholesale shoe saleman, sold:

150 pairs of shoes at Rs. 599.99 per pair
300 pairs of shoes at Rs. 1000.75 per pair
600 pairs of shoes at Rs. 700.00 per pair

If his commission rate is 4.5%, how much does he receive?

SOLUTION

Pairs of Shoes	Rate per Pair	Amount of Sales
150	Rs. 599.99	Rs. 89998.50
300	Rs. 1000.75	Rs. 300225.00
600	Rs. 700.00	Rs. 420000.00

Total Sales = 89998.50 + 300225 + 420000 = Rs. 810223.50
Rate% of Commission = 4.5%
Amount of Commission = $810223.50 \times 4.5\%$

$$= \frac{810223.50 \times 4.5}{100} = \frac{810223.50 \times 45}{1000}$$

$$= \text{Rs. } 36460.06$$

-:2.40:-

Dawar sold Rs. 81000 worth of merchandise last month. He is paid commission on the following basis:

5% on the first Rs. 24000.
7% on the second Rs. 30000
9% on the over Rs. 54000

How much did he earn last month?

SOLUTION

Sales	Rate% of Commission	Amount of Commission
Rs. 24000	5%	24000 x 0.05 = Rs. 1200
Rs. 30000	7%	30000 x 0.07 = Rs. 2100
Rs. 54000	9%	54000 x 0.09 = Rs. 4860
		Total Commission = Rs. 8160

-:2.41:-

The ABC company sells electrical items to wholesaler retailers and industrial purchasers. Each purchaser receives a different discount according to the nature of his business. The retailers get 40%, wholesaler 42% and industrial purchasers 47%. How much did each of the following purchasers pay for item listing at Rs. 2030 each?

a) The retailer bought 12 items
b) The wholesaler bought 30 item.
c) The industrial purchaser bought 120 items

SOLUTION

Since different Rate% are given as follows:

40% discount for Retailer
42% discount for Wholesales
47% discount for Industrial

We calculate the payment of each purchaser in the following table.

Purchaser	Price per unit	No of Units Purchased	Sales Amount	Rate% of Discount	Amount of Discount	Payment
Retailer	Rs. 2030	12	Rs. 24360	40%	Rs. 9744	Rs. 14616
Wholesaler	Rs. 2030	30	Rs. 60900	42%	Rs. 25578	Rs. 35322
Industrial	Rs. 2030	120	Rs.243600	47%	Rs.114492	Rs. 29108

Hence Retailers Pay = Rs. 14616
Wholesaler Pay = Rs. 35322
Industrial Pay = Rs. 129108

-:2.42:-

Find the amount of cash necessary to settle the following transactions within the discount period. A bill was received for Rs. 8120 consisting of Rs. 7000 of merchandise and Rs. 1120 for freight

charges. Upon receiving the merchandise Rs. 500 worth was found to be defective and returned. The discount rate is 2%.

SOLUTION

Here	Total Bill	= Rs. 8120
	Less Freight	= Rs. 1120
		= Rs. 7000
	Less Returned Merchandise	= Rs. 500
		= Rs. 6500
	Less Discount (2% of 6500)	= Rs. 130
		= Rs. 6370
	Plus Freight	= Rs. 1120
	Amount Due	= Rs. 7490

-:2.43:-

A commission saleman is paid as follows:

3% on the first Rs. 1000 of sales

4.5% on the next Rs. 3000 of sales

6.5% on all over Rs. 4000 of sales.

Calculate total remuneration of saleman on sales of Rs. 20,325.

SOLUTION

Total Sales = Rs. 20325
Amount of Commission of Rs. 1000 Sales @ 3% = Rs. 30.00
Amount of Commission of Rs. 3000 Sales @ 4.5% = Rs. 135.00
Amount of Commission of Rs. 16325 Sales @ 6.5% = Rs.1061.125
Total Remuneration of Saleman = Rs. 1226.125.

-:2.44:-

A saleman sold merchandise to Rs. 73000 during June. He receives 3% on the fist Rs. 15000; 6% on the next Rs. 15000 and 8% on the remainder. What was his commission for the month?

SOLUTION

Total Sales = Rs. 73000
Amount of Commission for Rs. 15000 Sales @ 3% = Rs. 450
Amount of Commission for Rs. 15000 Sales @ 6% = Rs.900
Amount of Commission for Rs. 43000 Sales @ 8% = Rs. 3440
Total Commission = Rs. 4790