Chapter # 6

PERCENTAGES

EXERCISE 6.1

Q.1 ***Shahzad got 40 rupees as pocket money. He spent 24 rupees. What percent of pocket money did he spend?***

Solution:

Pocket money = 40 rupees
Expenditure = 24 rupees

Expendituee percent = $\frac{21}{40} \times 100 = 60\%$ **Ans**

Q.2 ***The population of village was 7740 in 1961. In 1971 the population becomes 8901. Find percent increase in population?***

Solution:

Population in 1961 = 7740
Population in 1971 = 8901
Increase in population = 8901−7740=1161
Percent increase in population

$= \frac{1161}{7740} \times 100 = 15\%.$ Ans

Q.3 ***Estimated expenditure on a house was 15000 rupees but 3600 rupees more were spent. Find percent increase in expenditure***

Solution:

Estimated expenditure = 15000
Excess spent = 3600
Percent incrase in expenditure

$= \frac{3600}{15000} \times 100 = 24\%$ **Ans**

Q.4 ***Income of a person is 750 rupees and expenditure is 630 rupees per month. Find his percent saving?***

Solution:

Income = 750

Expenditure = 630

Saving (750–630)=120

On 750 saving is 120

On 1 saving is $= \frac{120}{750}$

On 100 saving is $= \frac{120 \times 100}{750} = 16\%$ Ans

Q.5 ***Of what number 9 is 20 percent and of what number is 15 percent?***

Solution:

(i) $20\% = 9$

$\therefore$ Number $= \frac{9}{20} \times 100 = 9 \times 5 = 45$

(2) $15\% = 9$

$\therefore$ Number $= \frac{9}{15} \times 100 = 60$

Number are 45 and 60. Ans

Q.6 ***$7\frac{1}{2}$ percent of what number is equal to 30?***

Solution:

$$7\tfrac{1}{2} = \frac{15}{2}$$

Now $\frac{15}{2}\% = 30$

$\therefore$ The number $= \frac{30 \times 2}{15} \times 100 = 400.$ Ans

Q.7 ***A person bought some maltas. 20 percent were rotten and the remaining were 120 maltas. Find the total number of maltas?***

Solution:

Suppose the bought *100* maltas.
Nuber of rotten maltas = *20% i.e. 20.*
Remaining maltas = *(100–20) = 80*
If *80* maltas remain unrotten total number of malta - *100*

If *1* malta remain unrotten total number of malta $= \frac{100}{80}$

If *120* maltas remain unrotten total number of malta

$$= \frac{100 \times 120}{80} = 150 \quad \textbf{Ans}$$

Q.8 ***Shahid did 24 experiments and said that he had completed 75% experiments. Find total number of experiments?***

Solution:

Experiment done = 24
Now $75\% = 24$
$\therefore$ Total number of experiments

$$= \frac{24}{75} \times 100 = 32.$$

Q.9 ***On a sale the price of a pair of shoes was Rs. 72 which is 60 percent of the total price. Find the original price?***

Solution:

Cost of shoes = 72 rupees
72 was 60% of the originial price
$60\% = 72$ rupees

Original price of shoes $= \frac{72}{60} \times 100 = 60$ rupees

Q.10 A person paid 2750 rupees to the bank. In this way he paid 55% of the loan. What was the total amount of loan?

Solution:

retarned = 2750 rupees

2570 was 55% of the total loan

55% of loan = 2750 rupees

$$\therefore \quad \text{Total loan} = \frac{2750}{55} \times 100 = 5000$$

EXERCISE 6.2

Q.1 ***Annual saving of a person is 2400 rupees. His wife has ornaments worht Rs. 2050. What amount of Zakat is due on him?***

Solution:

Saving = 2400

Ornaments of wife = 2050

Total amount on which Zakat is due

2400 + 2050 = 4450

Rate of Zakat = $2\frac{1}{2}\%$ or 5/2%

Zakat due $\frac{5}{2} \times \frac{1}{100} \times 4450 = \frac{445}{4} = 111.25$ rupees

Q.2 ***A person paid Rs. 56.50 as Zakat in a year. Find his savings for the year.***

Solution:

Zakat paid = 56.50

Rate of Zakat = $2\frac{1}{2}$ or 5/2%

Saving = 2/5 × 100 × 56.50

= 56.50 × 40

= 2260 rupees. ***Ans***

Q.3 ***Annual income of a person from salary is 39145 rupees, and the annual income from other sources is 6455 rupees. Find his incometax for the year. When he has paid Rs. 300 to Zakat Fund and Rs. 200 to wealth tax.***

Solution:

Annual income = Rs. 39145.

Annual:

Income from other sources	= Rs. 6,455
Total:	= Rs. 21,455
Personal Allowance	= Rs. 18,000
Taxable amount	= Rs. 3,455

As the taxable income is less than Rs. 4,000. The tax will be = Rs. 60.

Q.4 ***The rent of a house is Rs. 150 per month. Find property tax due on him at the rate of 15 recent?***

Solution:

The annual income from the house = Rs. 150×12

= Rs. 1800

Land Tax @ 15% annually $= 1800 \times \frac{15}{100} = 270$. Ans

Q.5 ***A person pays 165 rupees as property tax for his house, the rent of the house is 5% of its value. Find the value of the house if rate of property tax is 15 percent?***

Solution:

Property tax = Rs. 165

Rate of tax = 15%

Annual income of the house $= 165 \times \frac{100}{15}$

= Rs. 1100

The rent of the house 5% of value = 1100

$\therefore$ Value of the house $= 1100 \times \frac{100}{15}$

= 22000 ***Ans***

Q.6 ***The price of a radio was 725 rupees at the Karachi Sea Port. Find the inland price of the radio if the custom duty was paid at the rate of 80 percent?***

Solution:

Price of radio at port = 725 rupees

Custom duty @ 80% $= \frac{80}{100} \times 725 = -580$ rupees

Inlad price = Price at port + Custom duty

$-725-580=1305$ rupees. ***Ans***

Q.7 ***A person sends a motor car from outside Pakistan. He paid Rs. 21,000 rupees for it upto Karachi. On the amount he had to pay 80% as custom duty and a sum of Rs. 1425 rupees as insurance. Find the total inlad price of the motor car?***

Solution:

Price upto Karachi = Rs. *21,000* custom duty @ 80% on *21,000* $= \frac{80}{100} \times 21000 =$ *Rs. 16,800*

Expenditure on Insurance = Rs. *1425*

Inland price	= Rs. *21,000* upto Karachi
Custom duty	= Rs. *16,800*
Insurance	= Rs. *1,425*
Total:	= Rs. *39,225*

Q.8 ***On cinema tickets 20% is charged as recreation tax. In a Cinema tickets worth Rs. 4,250 were sold. What did the owner get and how much was paid as recreation tax?***

Solution:

Whole amount got = Rs. *4,250*

Suppose Price of one ticket = Rs. *1.00*

tax = Rs. *0.25*

Total price = Rs. *1.25*

When whole price = Rs. *1.25* then real price = Rs. *1*

Whole price = Rs. *1* then n real price = *1/1.25*

Whole price = Rs. *4,250* then real price

$$4250 \times \frac{1}{1.25}$$

$$= \frac{4250 \times 100}{1.25} = 850 \times 4$$

= Rs. *3400*

Gross income = Rs. *4250*

Net income = Rs. *3400*

Tax = 4250–3400=Rs. 850
Net income = 3400 rupees).
tax = 850 rupees) Ans

Q.9 ***A percent bought some goods worth 4500 rupees from outside Pakistan. He paid 25% as custom duty. He sold those goods to a shopkeeper at 20% profit. Find the shopkeeper's buying price?***

Solution:

Value of goods = 4500 rupees

Custom duty @ 25% $= \frac{25}{100} \times 4500 = 45 \times 25 = 1125$

Total expenditure of goods = Value of goods + Costom duty
= 4500+1125=5625

Profit @ 20% $= \frac{20}{100} \times 5625 = \frac{5625}{5} = 1125$

Buying price of shopkeeper
=5625+1125=6750 rupees. ***Ans***

EXERCISE 6.3

Q.1 ***The written price of a thing is 450 rupees. A discount of 20% is given on the written price. Find the discount and the reduced price of the thing?***

Solution:

Written price = 459 rupees

Discount @ 20% $= \frac{20}{100} \times 450 = 90$

Reduced price = Written price – Discount = $450-90=360$ rupees

Answers: Reduced price = 360 rupees
Discount = 90 rupees

Q.2 ***Samad placed an order for 50 books. The written price of every book is 3.20 and 20% discount is allowed. Find the discount and reduced price of the books?***

Solution:

Written price of books $= 3.20 \times 50 = 160$ rupees

Discount @ 20% $= \frac{20}{100} \times 160 = 32$

Reduced price = Written price – Discount

$= 160-32=128$

Answers:

Discount = 32 rupees
Reduced prices = 128 rupees

Q.3 ***Jamal Khan purchased the following things and was allowed discount at different rates. How much did he pay in total:***

(a) Books of 550 rupees ar 20% discount
(b) Note-Books of rupees 250 at 15% discount
(c) Pens of rupees 120 at 10% discount

Solution:

(a) Written cost of books = 550 rupees

Discount @ 20% $= \frac{20}{100} \times 550 = 110$

(b) Written cost of note-books = 250 rupees

Discount @ 15% $= \frac{15}{100} \times 250 = \frac{75}{2} = 37.50$ rupees

(c) Written cost of pens = 120 rupees

Discount @ 10% $= \frac{10}{109} \times 120 = 12$ rupees

Total written cost = 550+250+120=920

Total discout allowed = 110+37.50+12=159.50

Amount actually paid

=920−159.50=760.50 rupees. ***Ans***

Q.4 Aslam bought cloth at 15% discount. He also got 5% reduction by paying in cash. What did he pay for the cloth, the written price of which is 80 rupees?

Solution:

Writer price of cloth = 80 rupees

Discount @ 15% $= \frac{15}{100} \times 80 = 12$

Amount shown in Bill = 80−12=68 rupees

Rebate due to cash payment @ 5%

$$= \frac{5}{100} \times 68 = 3.40$$

Amount paid by Aslam = 68−3.40=64.60 rupees

Ans

Q.5 ***In a branch of a Shoe Company an agent gets 240 rupees per month and 10% commission total sale. In a month the sale in his shop was of Rs. 7545. Find his total income for the month?***

Solution:

Total sale = *7545* rupees

commission @ *10%* on total sale

$$= \frac{10}{100} \times 7545 = 754.50$$

Salary = *240* rupees

Total income = Salary + Commission

$= 240 + 754.50$

$= 994.50$ rupees. ***Ans***

Q.6 ***A newspaper seller sold newspapers of 540 rupees, a month and got a total commission of 81 rupees. Find his commission percentage?***

Solution:

Sale proceed to newspaper = *540* rupees

Commission = *81* rupees

On *540* rupees commission is *81*

On *1* rupees commission is $= \frac{81}{540}$

On *100* rupees commission is $= \frac{81}{540} \times 100 = 15\%$

$= 15\%$ ***Ans***

Q.7 ***A shopkeeper writes 25 percent more than the original price of things. Then he annouces 16% discount on sale. Find the price of a thing on sale, the original price of which was 180 rupees?***

Solution:

Original price = 180 rupees

Extra price @ 25% $= \frac{25}{100} \times 180 = 45$ rupees

Written price = Original price + Extra price

$180+45=225$ rupees

Rate of discount on sale = 16%

Discount on sale $= \frac{16}{100} \times 225 = 36$ rupees

Actual price = Written price − Discount

$= 225 - 36 = 189$ rupees

$= 189$ rupees. ***Ans***

Q.8 A factory owner fixed the following rates of commission: 15 percent commission on goods, the worth of which is upto 15000 rupees: 20 percent on goods the worth of which is more than 15000 rupees. An agent bought goods worth 26500 rupees: Find his commission?

Solution:

(1) Commission on 15000 @ 15%

$\frac{15}{100} \times 15000 = 2250$ rupees

Worth of goods excess of 15000 rupees

$26500-15000=11500$

(2) Commission 115000 @ 20%

$\frac{20}{100} \times 11500 = 2300$

Total commission = 2250 + 2300=: 4550 rupees

= 4550 rupees ***Ans***

Q.9 ***A broker got sold Sarwar's plot to Jamil for 11000 rupees. He got 1% from both the parties. Find broker's total commission. What did Sarwar get? What did Jamil pay?***

Solution:

Selling price of plot = *11000* rupees
Rate of commission = *1%*

Commission on *11000* $= \frac{1}{100} \times 11000 = 110$

Commission from both the parties = $110 \times 2 =$ *220* rupees

Answers:

Sarwar got = *11000−110=10890* rupees
Jamil paid = *11000+110=11110* rupees
Commission = *220* rupees

Q.10 ***A broker sold rice. He charged $12\frac{1}{2}$ percent brokerage from the landlord. What brokerage did he get if he sold rice worth Rs. 10,560?***

Solution:

Sale proceed to rice = *10560* rupees

Rate of brokerage = $12\frac{1}{2}$ or $\frac{25}{2}$ percent

Brokerage $= \frac{25}{2} \times \frac{1}{100} \times 10560 = 1320$

= *1320* rupees Ans



EXERCISE 6.4

Q.1 ***The cash price of a TV is 2000 rupees. If some one wants to buy it on instalments he will have to pay 200 rupees in cash and 9 monthly instalments. If the shopkeeper charges interest at the rate of 16 percent find the amount of monthly instalment?***

Solution:

Price of TV = 2000
Rate of interest = 16%
1st instalment = 200 rupees
Remaining amount = 2000−200 = 1800 rupees

Interest on 1800 @ 16% $= \frac{12}{100} \times 1800 = 216$ rupees

Interest on 1800 @ 16% for 9 months

$$= 216 \times \frac{4}{4} = 216$$

Total amount to be paid in 9 instalments
$= 1800 + 216 = 2016$

Monthly instalment

$$= \frac{2016}{9} = 224 \text{ rupees. } \textit{Ans}$$

Q.2 ***The cach price of 3 machine is 650 rupees. This machine can also be bought by paying 50 rupees in cash and 24 monthly instalments. The rate of interest is 24 percent per year. Find the amount of monthly instalments?***

Solution:

Cash price = 650 rupees
1st instalment = 50 rupees
Remaining price = 600 rupees
Interest @ 24% on 600 rupees

$$= \frac{24}{100} \times 600 = 144 \text{ rupees}$$

Interest @ 24% on 600 rupees for 2 years

$= 144 \times 2 = 288$ rupees

Total amount to be paid in 24 instalments

$= 600 + 288 = 888$ rupees

Rate of instalment $= \frac{888}{24} = 37$ rupees. ***Ans***

Q.3 ***Shakir bought a fan the cash price of which 330 rupees. He paid 30 rupees in cash and the remaining amount was paid in 10 monthly instalments of Rs. 32.20 each. How much did he pay more? What was the rate of interest per year?***

Solution:

Cash price = 330 rupees

1st instalment = 30 rupees

Remaining amount = 300 rupees

Amount paid in instalments @ 32.20 each

$= 32.20 \times 10 = 322$ rupees

Amount paid in excess $= 322 - 300 = 22$ rupees

Rate of interest $= \frac{22 \times 100 \times 12}{300 \times 10} = 8.8\%$

Excess paid = 22 rupees Rate of interest = 8.8%

Ans

Q.4 ***Cash price of a machine is 700 rupees. Aslam bought that machine by paying 100 rupees in cash and 10 monthly instalments if monthly instalment is Rs. 68.80. Find the rate percent per year of interest?***

Solution:

Cash price = 700 rupees

1st instalment = 100 rupees

Remaining amount = 700 – 100 = 600 rupees

Amount paid in 10 instalments = $68.80 \times 10 =$ 688 rupees

Rate of interest $= \frac{88 \times 100 \times 12}{10 \times 600} = 17.6\%$ ***Ans***

Q.5 The cash price of a cycle is 550 rupees. Find the rate per percent of year interest if it was bought by paying 50 rupees in cash and 20 instalments of Rs. 30.25 each. What amount was paid in excess?

Solution:

Cash price = 550 rupees

1st instalment = 50 rupees

To be paid in 20 instalment $= 20 \times 30.25 = 605$ rupees

Amount to be paid in excess $= 605 - 500 = 105$ rupees

Excess amount paid = 105 rupees

Rate of interest $= \frac{105 \times 100 \times 12}{500 \times 20} = 12.6\%$ Ans

Q.6 Ashfaq took a loan of 20,000 rupees. The rate of interest is 10% per year. Find the amount of instalment by clearning in interest with each instalemtn if the loan is to be paid in 4 six-monthly instalments?

Solution:

Amount of Loan = 20,000 rupees

Had the loan been interest-free. Ashfaq could have paid 20000/4 = 500 rupees per six-monthly instalment. But there is interest @ 10%.

Interest on 20000 for six months

$$= \frac{10}{100} \times 20000 \times \frac{1}{2} = 1000$$

$\therefore$ 1st instalment = 5000 + 1000 = 6000 rupees

Remaining amount after paying 1st instalment

20,000–5000 = 15000 rupees

Interest on 15000 for six months

$$= \frac{10}{100} \times 15000 \times \frac{1}{2} = 750 \text{ rupees}$$

2nd Instalment = *5000 + 750 = 5750* rupees

Remaining amount after *2nd* instalment

15000 − 5000 = 10000 rupees

Interest on 10000 for six months

$$= \frac{10}{100} \times 10000 \times \frac{1}{2} - 5000 \text{ rupees}$$

3rd instalment = *5000+500=5500*

Remaining amount after paying *3rd* instalment

10000 − 5000 = 5000

Interest on *5000* for six months

$$= \frac{10}{100} \times 5000 \times \frac{1}{2} = 250 \text{ rupees}$$

4th instalment = *5000+250=5250* rupees

Answers:

1st instalment = *6000* rupees
2nd instalment = *5750* rupees
3rd instalment = *5500* rupees
4th instalment = *5250* rupees

Q.7 ***A person took a loan of 12000 rupees from a society. He promised to pay loan back in six-monthly instalment if the rate of interest is 10% per year?***

Solution:

Amount of loan - 12,000 rupees

His instalments would have been *12000/6=2000* if the loan would have born interest-free. But there is interest at the rate of *10%* per year,

Interest for six months on *12000* rupees

$$= \frac{10}{100} \times 12000 \times \frac{1}{2} = 600 \text{ rupees}$$

1st instalment = *2000 + 600 = 2600* rupees

Remaining amount after paying *1st* instalment

12000−2000 = 10000 rupees

Interest on 10000 rupees for six months

$$= \frac{10}{100} \times 10000 \times \frac{1}{2} = 500 \text{ rupees}$$

2nd instalment = 2000+500 = 2500 rupees

Remaining amount after paying 2nd instalment

10000−2000 = 8000 rupees

Interest on 8000 rupees for six months

$$= \frac{10}{100} \times 8000 \times \frac{1}{2} = 400 \text{ rupees}$$

3rd instalment = 2000 + 400 = 2400

Remaining amount after paying 3rd instalment

= 8000−2000=6000 rupees

Interest open 6000 rupees for six months

$$= \frac{10}{100} \times 6000 \times \frac{1}{2} = 300 \text{ rupees}$$

4th instalment = 2000+300=2300 rupees

Remaining amount after paying 4th instalment

= 6000−2000=4000 rupees

Interest on 4000 rupees for six months

$$= \frac{10}{100} \times 4000 \times \frac{1}{2} = 200 \text{ rupees}$$

5th instalment = 2000+200=2200 rupees

Remaining amount after paying 5th instalment

= 4000−2000=2000 rupees

Interest on 2000 rupees for six months

$$= \frac{10}{100} \times 2000 \times \frac{1}{2} = 100 \text{ rupees}$$

6th instalment = 2000+100=2100 rupees

Answers:

1st instalment = 2600 rupees
2nd instalment = 2500 rupees
3rd instalment = 2400 rupees
4th instalment = 2300 rupees
5th instalment = 2200 rupees
6th instalment = 2100 rupees

Q.8 ***A person took a loan of 5000 rupees from a Zamindara Bank. He promised to pay back the loan in 2 six-monthly instalments. The per year rate of insterest is 10%. How much did he pay in total? Find the rate of instalment?***

Solution:

Amount of loan = 5000 rupees

Haid the loan been interest free be could have paid it *5000/2* = 2500 rupees per ionstalment. But thhere is an interest at the rate of 10%.

Solution:

Interest on 5000 rupees for six months

$$= \frac{10}{100} \times 5000 \times \frac{1}{2} = 250 \text{ rupees}$$

1st instalment = *2500+250=2750* rupees

Remaining amount after playing *1st* instalment

= *5000=2500=2500* rupees

Interest on 2500 rupees for six months

$$= \frac{10}{100} \times 2500 \times \frac{1}{2} \times 125 \text{ rupees}$$

2nd instalment = *2500+125=2625* rupees

Answers:

He paid the total = 2750+2625=5375 rupees

1st instalment = *2750* rupees

2nd instalment = *2625* rupees

