

Unit - 4

Financial Arithmetic

After completion of this unit, the students will be able to:

- Define compound proportion.
- Solve real life problems involving compound proportion, partnership and inheritance.
- Define commercial bank deposits, types of a bank account (PLS saving account, current deposit account, PLS term deposit account and foreign currency account).
- Describe negotiable instruments like cheque, demand draft and pay order.
- Explain online banking, transactions through ATM (Auto Teller Machine), debit card and credit card (Visa and Master).
- Convert Pakistani Currency to well-known international currencies.
- Calculate:
 - The profit/markup,
 - The principal amount,
 - The profit/markup rate,
 - The period.
- Explain:
 - Overdraft (OD),
 - Running Finance (RF),
 - Demand Finance (DF),
 - Leasing.
- Solve real life problems related to banking and finance.
- Find percentage profit and percentage loss,
- Find percentage discount.
- Solve problems involving successive transactions.
- Define insurance.
- Solve real life problems regarding life and vehicle insurance.
- Explain income tax, exempt income and taxable income.
- Solve simple real life problems related to individual income tax assesse.

4.1 COMPOUND PROPORTION

We have learnt in previous grades that the equality of two ratios is called a proportion.

If four quantities a, b, c and d are in proportion then mathematically these are written as $a : b :: c : d$.

In fact it is a relationship between two ratios $a : b$ and $c : d$.

Proportion is of two kinds:

- (i) Direct proportion
- (ii) Inverse proportion

(i) Direct proportion

The relationship between two ratios in which increase or decrease in one quantity causes a proportional increase or decrease in the second quantity is called direct proportion.

Example 1: If the price of 12 eggs is Rs.96, how many eggs can be bought with Rs.80?

Solution:

We see that as the amount decreases the number of eggs also decreases. So it is a direct proportion.

Let the number of eggs be x .

$$\begin{array}{ccccccc} \text{Eggs} & : & \text{Eggs} & : & \text{Rs.} & : & \text{Rs.} \\ 12 & : & x & : & 96 & : & 80 \end{array}$$

$$\Rightarrow \frac{12}{x} = \frac{96}{80}$$

$$\Rightarrow 96 \times x = 12 \times 80$$

$$\Rightarrow x = \frac{12 \times 80}{96} = 10 \text{ eggs}$$

In vertical form it can be written as:

$$\begin{array}{ccc} \text{Eggs} & : & \text{Rupees} \\ 12 & \uparrow & 96 \\ x & \uparrow & 80 \end{array}$$

$$\Rightarrow \frac{x}{12} = \frac{80}{96}$$

$$\Rightarrow x = \frac{80 \times 12}{96} = 10 \text{ eggs}$$

(ii) Inverse proportion

The relationship between two ratios in which increase in one quantity causes a proportional decrease in the second quantity and vice versa is called an inverse proportion.

Example 2: 10 men have ration for 21 days in a camp. If 3 men leave the camp, for how many days will the ration be sufficient for the remaining men?

Solution:

Total men = 10

The men leave the camp = 3

The remaining men = 7

We see that as the number of men decreases, the ration will be sufficient for more days (days increase). So it is an inverse proportion.

Let the number of days be x

Men : **Men :** **Days :** **Days**
 10 : 7 : 21 : x

In vertical form we can write it as:

$$\begin{array}{ccc}
 \text{Men} & : & \text{Days} \\
 10 \downarrow & & 21 \uparrow \\
 7 & & x \\
 \Rightarrow \frac{x}{21} = \frac{10}{7} \\
 \Rightarrow x = \frac{10 \times 21}{7} = 30 \text{ days}
 \end{array}$$

Thus the ration (food) will be sufficient for 30 days.

4.1.1 Definition of compound proportion

The relationship between two or more proportions is known as compound proportion.

4.1.2 Solve real life problems involving compound proportion, partnership and inheritance**(a) Compound proportion**

The procedure of solving questions relating to the compound proportion is illustrated below with the help of examples.

Example 3: If 35 labourers dig 805 cm^3 of earth in 5 hours, how much of the earth will 30 labourers dig in 6 hours?

Solution: As the number of labourers decrease, the earth dug will also decrease. It is a direct proportion.

As the working time increase, the earth dug will also increase. It is also a direct proportion.

Let the earth dug be $x \text{ cm}^3$

Labourers 35 ↑ 30 ↑	:	Hours 5 ↑ 6 ↑	:	Earth (cm^3) 805 ↑ x ↑
----------------------------------	---	----------------------------	---	---

$$\Rightarrow \frac{x}{805} = \frac{6}{5} \times \frac{30}{35}$$

$$\Rightarrow x = \frac{6 \times 30 \times 805}{35}$$

$$x = 6 \times 6 \times 23$$

$$x = 828 \text{ cm}^3$$

Thus, 828 cm^3 earth will be dug.

Example 4: Rs.8,000 are sufficient for a family of 4 members for 40 days. For how many days Rs.15,000 will be sufficient for a family of 5 members?

Solution: We see that as amount increases the number of days also increases. So it is direct proportion.

As the members of a family increase the number of days decrease. So it is an inverse proportion.

Let the number of days be x .

Rupees 8,000 ↑ 15,000 ↑	:	Members 4 ↓ 5 ↓	:	Days 40 ↑ x ↑
--------------------------------------	---	------------------------------	---	----------------------------

$$\Rightarrow \frac{x}{40} = \frac{4}{5} \times \frac{15000}{8000}$$

$$\text{or } x = \frac{4 \times 15000 \times 40}{8000}$$

$$x = 4 \times 15 = 60 \text{ days}$$

Thus, the amount shall be sufficient for 60 days.

Example 5: If 4200 men have sufficient food for 32 days at a rate of 12 hectogram per person, how many men may leave so that the same food be sufficient for 42 days at a rate of 16 hectogram per person?

Solution: As the number of days increase, the number of men decreases. So, it is an Inverse Proportion.

As the quantity of food increases the number of men decreases. So it is also Inverse Proportion.

Let the number of men be x .

Days	:	Food	:	Men
32 42	↓ ↓	12 16	↓ ↓	4200 x
				↑ ↑

$$\Rightarrow \frac{x}{4200} = \frac{32}{42} \times \frac{12}{16}$$

$$\text{or } x = \frac{2 \cancel{32} \times 12 \times \cancel{4200}^{100}}{1 \cancel{42} \times \cancel{16}_1}$$

$$x = 2 \times 12 \times 100$$

$$= 2400 \text{ men}$$

Thus, the food will be sufficient for 2400 men. So, $4200 - 2400 = 1800$ men may leave.

EXERCISE 4.1

1. 30 men repair a road in 56 days by working 6 hours daily. In how many days 45 men will repair the same road by working 7 hours daily?
2. If 60 women spin 48 kg of cotton by working 8 hours daily, how much cotton will 30 women spin by working 12 hours daily?
3. If the price of a carpet 8 metre long and 3 metre wide is Rs. 6288, what will be the price of 12 metre long and 6 metre wide carpet?
4. If 15 laboures earn Rs. 67,500 in 9 days, how much money will 10 laboures earn in 12 days?
5. 70 men can complete a wall of 150 metre length in 12 days. How many men will complete the wall of length 600 metre in 30 days?
6. If the fare of 12 quintal luggage for a distance of 18 km is 12 rupees, how much fare will be charged for a luggage of 9 quintals for a distance of 20 km?

7. 14 masons can build a wall 12 metres high in 12 days. How many masons will be needed to build a wall 120 metre high in 7 days?
8. 15 machines prepare 360 sweaters in 6 days. 3 machines get out of order. How many sweaters can be prepared in 10 days by the remaining machines?
9. 1440 men had sufficient food for 32 days in a camp. How many men may leave the camp so that the same food is sufficient for 40 days when the ration is increased by $1\frac{1}{2}$ times? [Hint: The 1st element (food) is 1 and the 2nd element (food) is $\frac{3}{2}$]
10. Ten men can assemble 400 cycles in 8 days. How many cycles 5 men will assemble if they work for 16 days?

(b) Partnership

A business in which two or more persons run the business and they are responsible for the profit and loss is called the partnership.

If the partners start the business and close it together with same or different investment capital, this partnership is called a simple partnership.

If the partners contribute different capitals for different time periods or at least one partner contributes two or more capitals for different time periods, then this partnership is called a compound partnership. In this case the profit or loss is divided in the ratio of monthly investments.

Example 6: Saud and Ammar started a business with capitals of Rs.56,000 and Rs.64,000 respectively. After one year they earned a profit of Rs.22,500. Find the share of each one.

Solution: The simplified form of capital share ratio:

Saud's share	:	Ammar's Share
56,000	:	64,000
56	:	64
7	:	8
Sum of ratios	=	$7 + 8 = 15$
Total Profit	=	Rs. 22,500
Saud's Profit	=	$\frac{7}{15} \times 22500 = 1500$
	=	$7 \times 1500 = \text{Rs. } 10,500$
Ammar's Profit	=	$\frac{8}{15} \times 22500$
	=	$8 \times 1500 = \text{Rs. } 12,000$

Example 7:

Tahir started a business with a capital of Rs. 15,000. After 5 months Umar also joined him with an investment of Rs. 30,000. At the start of 9 months Usman joined them by investing Rs. 45,000. At the end of the year they earned a profit of Rs. 406,000. Find the share of each one.

Solution:

$$\begin{aligned}
 \text{Tahir's investment for 12 months} &= \text{Rs. } 15,000 \\
 \text{Tahir's effective investment for 1 month} &= 15000 \times 12 \\
 &= \text{Rs. } 180000 \\
 \text{Umar's investment for 7 months} &= \text{Rs. } 30,000 \\
 \text{Umar's effective investment for 1 month} &= 30,000 \times 7 \\
 &= \text{Rs. } 210000 \\
 \text{Usman's investment for 3 months} &= \text{Rs. } 45,000 \\
 \text{Usman's effective investment for 1 month} &= 45000 \times 3 \\
 &= \text{Rs. } 135000
 \end{aligned}$$

Ratios of Capitals

$$\begin{array}{rcccc}
 \text{Tahir} & : & \text{Umar} & : & \text{Usman} \\
 180\ 000 & : & 210\ 000 & : & 135\ 000 \\
 180 & : & 210 & : & 135 \\
 12 & : & 14 & : & 9
 \end{array}$$

$$\text{Sum of ratios} = 12 + 14 + 9 = 35$$

$$\begin{aligned}
 \text{Tahir's share} &= \frac{12}{35} \times \frac{81200}{11600} \times 406000 \\
 &= 12 \times 11600 = \text{Rs. } 139200
 \end{aligned}$$

$$\begin{aligned}
 \text{Umar's share} &= \frac{14}{35} \times \frac{11600}{406000} \\
 &= 14 \times 11600 = \text{Rs. } 162400
 \end{aligned}$$

$$\begin{aligned}
 \text{Usman's share} &= \frac{9}{35} \times \frac{11600}{406000} \\
 &= 9 \times 11600 = \text{Rs. } 104400
 \end{aligned}$$

Example 8:

Saud, Ali and Saad started a business with *Rs.15,000*, *Rs.19,000* and *Rs.12,000* respectively. Saud manages the business and receives allowance of *Rs. 16,000* for this assignment. After 5 months Ali withdraws *Rs.9,000* and business is closed after 9 months. What did each receive in the profit of *Rs. 58,000*.

Solution:

Saud's capital for 9 months	=	<i>Rs. 15,000</i>
Saud's effective capital for 1 month	=	<i>15000 × 9</i>
	=	<i>Rs. 135,000</i>
Ali's capital for 5 months	=	<i>Rs. 19,000</i>
Ali's effective capital for 1 month	=	<i>19,000 × 5</i>
	=	<i>Rs. 95,000</i>
Ali's capital for 4 months	=	<i>Rs. 10,000</i>
Ali's effective capital for 1 month	=	<i>10,000 × 4</i>
	=	<i>Rs. 40,000</i>
Ali's total capital	=	<i>95,000 + 40,000</i>
	=	<i>Rs. 135000</i>
Saad's capital for 9 months	=	<i>Rs. 12,000</i>
Saad's effective capital for 1 month	=	<i>12,000 × 9</i>
	=	<i>Rs. 108000</i>
Total Profit	=	<i>Rs. 58,000</i>
Saud's Allowance	=	<i>Rs. 16,000</i>
Net Profit = <i>58,000-16000</i>	=	<i>Rs. 42,000</i>

Ratios of capital:

Saud's	:	Ali's	:	Saad's
<i>135000</i>	:	<i>135000</i>	:	<i>108000</i>
<i>135</i>	:	<i>135</i>	:	<i>108</i>
<i>15</i>	:	<i>15</i>	:	<i>12</i>
<i>5</i>	:	<i>5</i>	:	<i>4</i>

$$\text{Sum of ratios} = 5 + 5 + 4 = 14$$

$$\begin{aligned} \text{Saud's Profit} &= \frac{5}{14} \times \cancel{42,000}^{3000} \\ &= 5 \times 3000 \\ &= \text{Rs. } 15,000 \end{aligned}$$

$$\text{Saud's Allowance} = \text{Rs. } 16,000$$

$$\begin{aligned} \text{Saud received} &= \text{Total of Saud's Profit} + \text{Allowance} \\ &= 15,000 + 16,000 = \text{Rs. } 31,000 \end{aligned}$$

$$\begin{aligned}\text{Ali's Profit} &= \frac{5}{14} \times 42000 \\ &= 5 \times 3000 \\ &= \text{Rs. } 15,000\end{aligned}$$

$$\begin{aligned}\text{Saad's Profit} &= \frac{4}{14} \times 42000 \\ &= 4 \times 3000 \\ &= \text{Rs. } 12,000\end{aligned}$$

EXERCISE 4.2

- Aslam and Akram invested *Rs. 27,000* and *Rs. 30,000* to start a business. If they earned a profit of *Rs. 66,500* at the end of the year, find the profit of each one.
- Amina and Maryam started a business with investment of *Rs. 30,000* and *Rs. 40,000* respectively in one year. At the end of the year they earned a profit of *Rs. 8400*. Find the share of each one.
- Two partners contributed *Rs. 4000* and *Rs. 3000*. 1^{st} contributed for 9 months and the 2^{nd} contributed the amount for 7 months. Divide a profit of *Rs. 11590* between the partners.
- Saad, Saud and Saeed started a business with capital of *Rs. 12,000*, *Rs. 18,000* and *Rs. 24,000* respectively. At the end of the year, they suffered with a loss of *Rs. 13,500*. Find the share of each in this loss.
- Akram and Asghar started a business with *Rs. 9,000* and *Rs. 11,000* respectively. Akram withdraws *Rs. 1000* after 6 months. After 2 months of his withdrawal Asghar invested *Rs. 1000* more. After a year they earned a profit of *Rs. 14,000*. Find the share of each in the profit.
- Three friends *A*, *B* and *C* started a firm with *Rs. 20,000*, *Rs. 16,000* and *Rs. 18,000* respectively. *A* kept his money for 4 months, *B* for 6 months and *C* for 8 months. Divide a profit of *Rs. 12,000* among these friends.
- Aslam started a business with *Rs. 35,000*. After 3 months Akram joined the business with *Rs. 4000* and after 6 months Asghar invested *Rs. 5000*. At the end of the year they earned a profit of *Rs. 1620*. Find the share of each in the profit.

(C) Inheritance

When a person dies, then the assets left by him are called inheritance and it is distributed among his legal inheritors according to Islamic Shariah Law. In Islam the principles of distribution of inheritance are given below.

- First of all his/her funeral expenses and all his/her all debt be paid.
- Then execute the will upto $1/3$ of his/her property if asked for.
- Then distribute the remaining inheritance accordingly.

The procedure is illustrated with the help of following examples.

Example 9: A man left his property of Rs. 640000. A debt of Rs. 40,000 was due to him and Rs. 5,000 was spent on his burial. Distribute the amount between his widow, 1 daughter and 2 sons according to the Islamic Law.

Solution:

$$\begin{aligned} \text{Total amount of Property} &= \text{Rs. } 640000 \\ \text{His debt} &= \text{Rs. } 40,000 \\ \text{Burial Expenses} &= \text{Rs. } 5,000 \\ \text{Total Amount paid} &= 40,000 + 5,000 = \text{Rs. } 45,000 \\ \text{Remaining amount} &= 640000 - 45,000 \\ &= \text{Rs. } 595000 \\ \text{Widow's Share} &= \frac{1}{8} \times 595000 \\ &= \text{Rs. } 74,375 \\ \text{Remaining Inheritance} &= 595000 - 74,375 \\ &= \text{Rs. } 520625 \end{aligned}$$

Now ratios of shares

$$\begin{array}{ccc} \text{Sons} & : & \text{Daughter} \\ 2 & : & 1 \\ 2 \times 2 = 4 & : & 1 \times 1 = 1 \end{array}$$

$$\text{Sum of ratios} = 4 + 1 = 5$$

$$\begin{aligned} \text{Share of 2 Sons} &= \frac{4}{5} \times 520625 \\ &= 4 \times 104125 \\ &= \text{Rs. } 416500 \end{aligned}$$

$$\text{Share of each son} = \frac{416500}{2} = \text{Rs. } 208250$$

$$\begin{aligned} \text{Share of one daughter} &= \frac{1}{5} \times 520625 \\ &= \text{Rs. } 104125 \end{aligned}$$

Example 10: Mst. Zainab Begum died leaving behind her a property of Rs. 802500 which was to be distributed among her husband, her mother and two daughters. The husband got $\frac{1}{4}$, mother got $\frac{1}{6}$ and remaining for 2 daughters. Rs. 7,500 was spent on her burial. Find the share of each one.

Solution:

$$\begin{aligned} \text{Total amount left} &= \text{Rs. } 802500 \\ \text{Expenditure on her burial} &= \text{Rs. } 7,500 \\ \text{Remaining amount} &= 802500 - 7,500 \\ &= \text{Rs. } 795000 \end{aligned}$$

$$\begin{aligned}
 \text{Share of her husband} &= \frac{1}{4} \times 795000 \\
 &= \text{Rs. } 198750 \\
 \text{Share of her mother} &= \frac{1}{6} \times 795000 \\
 &= \text{Rs. } 132500 \\
 \text{Total share of her husband and her mother} &= 198750 + 132500 \\
 &= \text{Rs. } 331250 \\
 \text{Remaining Inheritance} &= 795000 - 331250 \\
 &= \text{Rs. } 463750 \\
 \text{Share of 2 daughters} &= \text{Rs. } 463750 \\
 \text{Share of each daughter} &= \frac{463750}{2} \\
 &= \text{Rs. } 231875
 \end{aligned}$$

EXERCISE 4.3

1. A man left Rs. 240000 as inheritance. His heirs are 6 daughters and 2 sons. Find the share of each such in heritor that a son gets twice of his sister's share.
2. Allah Ditta died leaving a property of Rs. 850000. He left a widow, two sons and one daughter. Find the share of each in the inheritance if the burial expenditure was Rs. 50,000.
3. Akram left a wealth of Rs. 780000. His heir is a widow, 3 sons and 4 daughters. Calculate the share of each one if the funeral expenses is Rs. 30,000 and a loan of Rs. 50,000 is due to him.
4. A man died leaving a saving of Rs. 72,000 in the bank. Find the share of each: widow, one son and one daughter.
5. Aslam left a property worth Rs. 650000. He had to pay Rs. 50,000 as debt. The remaining amount was divided among his 2 sons and 2 daughters. Find the share of each.
6. Asghar Ali died leaving assets worth Rs. 655275. Funeral expenses were Rs. 5275. He had to pay Rs. 50,000 as debt. After marking these payments, his widow shall get $\frac{1}{8}$ of the remaining property. Find the share of his son and one daughter when share of son is double the share of his daughter.

7. A person died leaving behind inheritance of Rs. 300000. Distribute the amount among 4 sons and 3 daughters so that each son gets double of what a daughter gets. Find the share of each when a debt of Rs. 80,000 was also to be paid.
8. Wife of Ahmad died leaving behind 2 daughters and a son. Ahmad got $\frac{1}{4}$ of the inheritance of Rs. 180000. The remaining amount was to be distributed among her children such that each son got twice of what a daughter got. Find the share of her son and each daughter.

4.2 BANKING

It is a business activity of accepting and safeguarding the money and then earn a profit by lending out this money.

4.2.1 Define Commercial Bank deposits

The function of bank which accepts deposits, provides loans and other services to the clients is known as commercial banking.

4.2.1.1 Types of a Bank Account

There are four types of bank accounts.

- **PLS Saving Bank Account:**

It is an account on the basis of profit and loss sharing. The bank uses the deposits in some business and gives the share in profit and loss to the account holder at the end of specified period. This account is meant to encourage the saving habits among the persons having small income means. Zakat is deducted on notified balance on first Ramadan each year.

- **Current Deposit Account:**

This account is usually opened by businessmen who have a number of deposits and withdrawal regularly. It is a running account and no interest is paid on its balance. In this account amount can be deposited and withdrawn at any time during banking hours without any notice. No Zakat is deducted on this account.

- **PLS Term Deposit Account:**

This account is free of interest. PLS term deposit holder shares profit and loss on the rate determined by the bank after every six months. The rate of profit on fixed deposits is comparatively higher than saving deposits.

- **Foreign Currency Account:**

A foreign currency account is the account maintained in a commercial bank in the currency other than Pakistani currency. Usually foreign currency accounts are maintained in Dollars, Pounds, Euro etc. Foreign currency accounts are exempted from Zakat and taxes. Rate of profit in this account is very low.

4.2.1.2 Describe negotiable instruments like cheque, demand draft and pay order

Negotiable Instrument:

It is a document which can be transferred from one person to another. It is payable either to the order of the bearer or to his agent as the case may be. This document is entitled to receive that amount which is mentioned in it.

Cheque:

A cheque is a written order that instructs a bank to pay the specific amount from a specified account to the holder of the cheque. A crossed cheque has to be deposited in the specified account.

Demand Draft:

It is a method used by individuals to make transfer payments from one bank account to another. The bank receives the money in advance before it issues the draft. A very small fee is charged by the bank to prepare it.

Pay order:

It is a document which instructs a bank to pay a certain amount to a third party. Pay order is issued by the bank on the request of its customer. It is issued on the receipt of full amount for which a pay order is issued by the bank. It can be encashed from any other bank.

4.2.2 On-line Banking

4.2.2.1 Explain On-line Banking

The use of internet by banks to assist their customers through on-line banking. It allows customers to perform banking transactions such as money withdrawal, pay utility bills and transfer funds from their account to another account. A good online bank will offer its customers just about every service traditionally available through a local branch.

- **Transactions through ATM (Auto Teller Machine)**

An automated teller machine (ATM) is electric devices that allows a bank's customer, to draw cash and check their account balances without any need for a humane teller. The transactions are as given below:

Withdraw money, make deposits, print a statement, check account balances and trasfer money between accounts.

- **Debit Card**

It is a plastic payment card that provides card holder electronic access to his bank account at anytime and anywhere. It is a facility provided to the customers to perform different transactions. It is a smarter and secured way to make quick payments at the time of purchase of different goods from traditional or online market.

- **Credit Card (Visa and Master)**

It is a thin plastic card which can be used to buy articles. Visa and Master cards are used worldwide for making payments. These are not the names of cards but are the names of global credit card companies. Credit card holder is charged an annual fee.

4.2.3 Conversion of Currencies

A foreign currency exchange rate is a price that represents how much it costs to buy the currency of one country using the currency of another country.

4.2.3.1 Convert Pakistani Currency to well-known international currencies

Currency conversion rates are not permanent but these change day by day. We use these currency rates to convert Pakistani currency to different international currencies. (rate of US \$ is equal to Rs. 99.80)

Example 1: Mr. Saud wants to exchange Pakistani Rupees (PKR). 50,000 to US dollars. How many US Dollars will he receive? (Rate of US \$ = Rs 99.80)

Solution: Amount to be converted = Rs. 50,000
 Rate of one US Dollar = Rs. 99.80
 Number of US Dollars = $\frac{50,000}{99.80} = US \$ 501$

Example 2: Convert Rs. 75,810 into UK£. (1 UK Pound = Rs. 168.50)

Solution: Amount to be converted = Rs. 75810
 Rate of 1UK £ = Rs. 168.50
 Number of UK £ = $\frac{75810}{168.50} = UK£ 449.91$

Table below shows current rate exchange rates of some currencies.

Country	Currency	Symbol	Buying(PKR)	Selling(PKR)
US	Dollar (\$)	\$	99.80	99.05
UK	Pound (£)	£	168.50	168.75
Saudi	Riyal (SR)	SAR	26.85	27.10
Indian	Rupee	₹	1.60	1.65

EXERCISE 4.4

1. Convert Rs. 70,000 into US \$ if the conversion rate is 1 US \$ = Rs.99.80.
2. Convert Rs. 75,000 into UK £. (Rate 1UK £ = Rs.168.50).
3. Convert Rs. 50,000 into Saudi Riyal. (Rate 1 SAR=Rs. 26.85).
4. Convert Rs. 48,000 into Indian Rupee. (1 INR = Rs. 1.60).
5. Convert Rs. 35,000 into Australian Dollar. (1 Australian Dollar=Rs.92.77).
6. Convert Rs. 80,000 into Chinese Yaun. (1 Chinese Yaun=Rs. 15.91).
7. Convert Rs. 50,000 into Canadian Dollar. (1 Canadian Dollar=Rs.92.00).
8. Convert Rs.70,000 into Turkish Lira. (1 Turkish Lira=Rs. 46.50).

4.2.4 Profit / Markup

- **Profit**

When we deposit money into a bank, the bank uses our money and in return pays an extra amount alongwith our actual deposit. The extra money which the bank gives for the use of our amount is called profit on the deposit.

- **Markup**

When we borrow money from bank to run a business, the bank in return receives some extra amount alongwith the actual money given. This extra money which the bank receives is known as markup.

- **Principal amount**

The amount we borrow or deposit in the bank is called principal amount.

- **Profit / Markup rate**

The rate at which the bank gives share to its account holders is known as profit / markup rate. It is expressed in percentage.

- **Period**

The time for which a particular amount is invested in a business is known as period.

4.2.4.1 Calculate the profit / markup, the Principal amount, the profit / markup rate, the period

- **Calculate profit / markup**

For calculation of profit / markup, we use the formula.

$$\text{Profit / markup} = \text{Principal} \times \text{Time} \times \text{Rate}$$

$$\text{or } I = P \times R \times T$$

The use of this formula is illustrated with the help of examples.

Example 3:

Younas borrowed Rs. 65,000 from a bank at the rate of 5% for 2 years. Find the amount of markup and the total amount to be paid.

Solution:

Here principal (P) = Rs. 65,000

Rate = 5%

Time (T) = 2 years

Markup = $P \times R \times T$

$$\begin{aligned} \text{Markup} &= 65,000 \times \frac{5}{100} \times 2 \\ &= 650 \times 5 \times 2 \\ &= \text{Rs. } 6,500 \end{aligned}$$

So, Younas will have to pay Rs. 6,500 as markup.

Total amount to be paid = $65,000 + 6,500 = \text{Rs. } 71,500$

Example 4:

A student purchased a computer by taking loan from a bank on simple interest. He took loan of Rs. 25,000 at the rate of 10% for 2 years. Calculate the markup to be paid and the total amount to be paid back.

Solution:

$$\begin{aligned} \text{Here } \textit{Principal (P)} &= \text{Rs. } 25,000 \\ \text{Rate (R)} &= 10\% \\ \text{Time (T)} &= 2 \text{ years} \\ \text{Markup} &= P \times R \times T \\ &= 25000 \times \frac{10}{100} \times 2 \\ &= 250 \times 20 = \text{Rs. } 5,000 \end{aligned}$$

He has to pay Rs. 5,000 as markup.

$$\text{Total amount to be paid} = 25,000 + 5,000 = \text{Rs. } 30,000$$

- **Calculate Principal Amount**

We have used formula of markup in the previous examples, we will use the same formula principal amount.

$$\begin{aligned} I &= P \times R \times T \\ P &= \frac{I}{R \times T} \end{aligned}$$

Example 5:

What principal amount is taken to bring in Rs. 640 as profit at the rate of 4% in 2 years?

Solution:

$$\begin{aligned} \text{Profit} &= \text{Rs. } 640 \\ \text{Rate (R)} &= 4\% \\ \text{Time (T)} &= 2 \text{ years} \\ \textit{Principal} &= \frac{\text{Profit}}{R \times T} \\ &= \frac{\cancel{640}^{80} \times 100}{\cancel{4}^1 \times \cancel{2}^1} \\ &= 80 \times 100 \\ &= \text{Rs. } 8,000 \end{aligned}$$

Thus, the principal amount = Rs. 8,000

Example 6:

A person got some loan on which he has to pay Rs. 3,500 as markup at the rate of 10% for 3.5 years. What is the amount of loan?

Solution:

$$\text{Markup} = \text{Rs. } 3,500$$

$$\text{Rate (R)} = 10\%$$

$$\text{Time (T)} = 3.5 \text{ years} = \frac{7}{2} \text{ years}$$

$$\text{Principal (P)} = \frac{\text{Interest}}{\text{Rate} \times \text{Time}}$$

$$\begin{aligned} \text{Principal} &= \frac{3500 \times 100 \times 2}{10 \times 7} \\ &= 50 \times 200 \\ &= \text{Rs. } 10,000 \end{aligned}$$

Thus, the amount of loan = Rs. 10,000

- **Calculate Profit / Markup rate**

The formula for calculation of profit rate is $\text{Rate} = \frac{\text{Markup}}{\text{Principal} \times \text{Time}}$

Example 7:

At what annual rate percent of markup would the principal amount Rs. 68,000 become Rs. 86,360 in 3 years?

Solution:

$$\text{Total amount to be paid} = \text{Rs. } 86,360$$

$$\text{Principal} = \text{Rs. } 68,000$$

$$\text{Markup} = 86,360 - 68,000$$

$$= \text{Rs. } 18,360$$

$$\text{Period / Time} = 3 \text{ years}$$

$$\text{Rate} = \frac{\text{Markup}}{\text{Principal} \times \text{Time}}$$

$$= \frac{18360 \times 100}{68000 \times 3}$$

$$= \frac{612}{68} = 9\%$$

$$\text{Rate of markup} = 9\%$$

- **Calculate the Period**

Example 8:

A person got loan from a bank at a rate of 3% per year for some period. In how much period his loan of Rs. 65,000 will become Rs. 68,900.

Solution:

$$\begin{aligned} \text{Total Amount} &= \text{Rs. } 68,900 \\ \text{Principal} &= \text{Rs. } 65,000 \\ \text{Markup} &= 68,900 - 65,000 \\ &= \text{Rs. } 3,900 \\ \text{Rate} &= 3\% \\ \text{Period / Time} &= ? \end{aligned}$$

$$\begin{aligned} \text{Period / Time} &= \frac{\text{Markup}}{\text{Principal} \times \text{Rate}} \\ &= \frac{3900}{65000 \times 3\%} \\ &= \frac{3900}{65000 \times \frac{3}{100}} \\ &= \frac{3900 \times 100}{65000 \times 3} \\ &= \frac{390000}{195000} \\ &= 2 \text{ years.} \end{aligned}$$

4.2.5 Types of Finance

4.2.5.1 Explain Overdraft (OD), Running Finance, Demand Finance and Leasing

- **Overdraft (OD):**

It is a borrowing facility provided by a bank to account holder to withdraw some amount in excess of his original account balance. In other words if there is no amount left in an account and the bank does not send a cheque back due to lack of funds in the drawer's account, then this is called Overdraft.

- **Running Finance:**

Running Finance is very similar to overdraft. The aim of running finance is to give a chance to the customers to withdraw more money that they actually have. Therefore it can be considered as a credit facility which is meant for a credit limit with a variable interest rate. Usually the running finance is granted for a period of 1 year.

- **Demand Finance:**

One can think of demand as a person's willingness to go out and buy a certain product. For example market demand is the total of what everybody in the market wants and is willing to pay for. To meet these requirements banks have demand finance. Demand is a type of loan that may be called in by the bank (or lender) at any time. It may be either short term or long term.

- **Leasing:**

A lease is a contractual agreement between the lessee (user) to pay the lessor (owner) for the use of an asset. It means the user rents the land or goods rented out by the owner. The ownership of the leased asset during the leased period known as term remains with the lessor. Hire purchase is a method of buying goods in which payments of purchase price is spread over specific term by payment of an initial deposit known as the down payment. It is explained with the help of examples.

4.2.5.2 Solve Real Life Problems Related to Banking and Finance

Example 9:

The price of a car is Rs. 450000. It can be bought at 15% of the price as down payment. It had to be leased on simple markup of $10\frac{1}{2}\%$ per year for 2 years. The installments will be made on monthly basis. Find

- The monthly installments
- The total leased price of the car paid.

Solution:

$$\begin{aligned}\text{Down payment} &= 15\% \text{ of } 450,000 \\ &= \frac{15}{100} \times 450,000\end{aligned}$$

$$\begin{aligned}&= 15 \times 4500 \\ &= \text{Rs. } 67,500\end{aligned}$$

$$\begin{aligned}\text{The remaining amount} &= 450000 - 67,500 \\ &= \text{Rs. } 382500\end{aligned}$$

$$I = P \times R \times T$$

$$\text{The markup on Rs. } 382500 \text{ for } 2 \text{ years} = 382500 \times \frac{21}{2} \times \frac{1}{100} \times 2$$

$$\begin{aligned}&= 3825 \times 21 \\ &= \text{Rs. } 80,325\end{aligned}$$

Additional amount to be paid in 24 monthly installments

$$\begin{aligned}&= 382500 + 80,325 \\ &= \text{Rs. } 462825\end{aligned}$$

$$\begin{aligned}\text{(i) Monthly installments} &= 462825 \div 24 \\ &= \text{Rs. } 19,284.38\end{aligned}$$

$$\begin{aligned}\text{(ii) Total amount paid} &= 67,500 + 462825 \\ &= \text{Rs. } 530325\end{aligned}$$

Example 10:

A company gets a house on lease for 6 years. According to agreement the company paid Rs. 1000000 as down payment and shall pay Rs. 20,000 per month as rent. After 3 years the company shall increase the rent 3%. Calculate the total amount the lesser (owner) would get:

Solution:

$$\text{Down payment received by the owner} = \text{Rs. } 1000000$$

$$\text{Rent per month for 3 years} = \text{Rs. } 20,000$$

$$\begin{aligned} \text{Total rent for 3 years} &= 3 \times 12 \times 20,000 \\ &= \text{Rs. } 720000 \end{aligned}$$

$$\text{Rate of rent after 3 years} = 20,000 \times \frac{103}{100}$$

$$= \text{Rs. } 20,600$$

$$\begin{aligned} \text{Total rent for next 3 years} &= 3 \times 12 \times 20600 \\ &= \text{Rs. } 741600 \end{aligned}$$

$$\begin{aligned} \text{Total amount received by the owner} &= 1000000 + 720000 + 7,41,600 \\ &= \text{Rs. } 2461000 \end{aligned}$$

EXERCISE 4.5

1. Find the profit on Rs. 40,000 at the rate of 3% per year for 4 years.
2. Saud borrowed Rs. 25,000 from bank at the rate of 6% per year for 3 years. Find the markup of the bank.
3. Find the principal amount invested by Riaz in a business if he receives a profit of Rs. 4200 in 3 years at the rate of 10% per year.
4. Ajmal invested some amount in a business. He receives a profit of Rs. 27,000 at the rate of 12% per year for 3 years. Find his original investment.
5. At what annual rate percent would Rs. 68,00 amount become Rs. 9,044 in 11 years?
6. At what annual rate of profit would a sum of Rs. 5800 will increase to Rs. 7105 in 3 years' time?
7. How long would Rs. 15,500 have to be invested at a markup rate of 6% per year to gain Rs. 2790.
8. How long would Rs. 25,000 have to be deposited in the bank at 12% per year to receive back Rs. 31,000.
9. Saeed invests Rs. 12,000 at $8\frac{1}{2}\%$ per year profit. How much would the amount be after 2 years and 6 months?
10. Arshad buys an air-conditioner at Rs. 45,000. For leasing it, he has to pay 10% down payment and remaining amount on simple markup of 15% per year for 2 years on monthly investments.
Find (i) Monthly installment and (ii) Total amount paid

11. A bank gets a piece of land on lease for 5 years. According to the agreement the bank paid Rs. 1200000 as down payment and shall pay Rs. 18,000 per month as rent. After 3 years the bank shall increase the rent by 3%. Find the total amount the owner (lessor) would get.

4.3 PERCENTAGE

The percentage means “per hundred” or “out of hundred”. The symbol used for percentage is %.

4.3.1 Profit and Loss:

If the selling price (S.P) is higher than the cost price (C.P), then profit occurs. It can be written as

$$\begin{aligned} \text{Profit} &= \text{Sale Price} - \text{Cost Price} \\ \text{or} \quad \text{Profit} &= \text{S.P} - \text{C.P} \end{aligned}$$

If the cost price (C.P) is higher than the selling price (S.P), then loss occurs. It can be written as

$$\begin{aligned} \text{Loss} &= \text{Cost Price} - \text{Sale Price} \\ \text{or} \quad \text{Loss} &= \text{C.P} - \text{S.P} \end{aligned}$$

4.3.1.1 Find Percentage Profit and Percentage Loss

Percentage profit or loss is always expressed in terms of cost price. To find percent profit and percentage loss we will use the following formulas accordingly.

$$\text{Percentage Profit} = \frac{\text{Profit}}{\text{Cost Price}} \times 100$$

$$\text{Percent Loss} = \frac{\text{Loss}}{\text{Cost Price}} \times 100$$

Example 1:

Saud bought a motor-cycle for Rs. 50,000 and sold it for Rs. 56,000. Find his percentage profit.

Solution:

$$\begin{aligned} \text{Cost Price (C.P)} &= \text{Rs. } 50,000 \\ \text{Sale Price (S.P)} &= \text{Rs. } 56,000 \\ \text{Profit} &= \text{S.P} - \text{C.P} \\ &= 56,000 - 50,000 \\ &= \text{Rs. } 6,000 \end{aligned}$$

$$\begin{aligned} \text{Profit \%} &= \frac{\text{Profit}}{\text{C.P}} \times 100 \\ &= \frac{6,000}{50,000} \times 100 \\ &= 12\% \end{aligned}$$

Example 2:

Hameed bought a piece of land worth *Rs. 300000* and sold, it for *Rs. 240000*. Find his profit / loss percentage?

Solution:

$$\begin{aligned}
 \text{Cost Price (C.P)} &= \text{Rs. } 300000 \\
 \text{Sale Price (S.P)} &= \text{Rs. } 240000 \\
 \text{Loss} &= \text{C.P} - \text{S.P} \\
 &= 300000 - 240000 \\
 &= \text{Rs. } 60,000 \\
 \text{Loss Percentage} &= \frac{\text{Loss}}{\text{C.P}} \times 100 \\
 &= \frac{20\cancel{00,000}}{1\cancel{00,000}} \times 100 \\
 &= \text{Rs. } 20\%
 \end{aligned}$$

4.3.2 Discount:

Discount means to reduce the price of an article from its market price which is also called list price or regular price. After reduction the amount is known as the sale price. The discount is the amount you saved in buying an article.

$$\text{Discount} = \text{Market price} - \text{Sale price}$$

The discount is usually expressed as the percentage of the market price.

4.3.2.1 Find Percentage Discount:

Following examples illustrate the procedure of finding percentage discount.

Example 3:

Ali bought some articles of worth *Rs. 2,500*. He was allowed *15%* discount on his purchase. Find sale price of the said articles.

Solution:

$$\begin{aligned}
 \text{Market price} &= \text{Rs. } 2500 \\
 \text{Discount} &= 15\% \\
 \text{Discount on the articles} &= \frac{2500 \times 15}{100} \\
 &= \text{Rs. } 375 \\
 \text{So, sale price} &= 2500 - 375 \\
 &= \text{Rs. } 2,125
 \end{aligned}$$

Example 4:

The market price of an article is Rs. 1,700. The sale price of the article is Rs. 1,360. Find the percentage discount.

Solution:

$$\begin{aligned}\text{Market Price} &= \text{Rs. } 1,700 \\ \text{Sale Price} &= \text{Rs. } 1,360 \\ \text{Discount} &= M.P - S.P \\ &= 1700 - 1360 \\ &= \text{Rs. } 340\end{aligned}$$

$$\begin{aligned}\text{Percentage discount} &= \frac{\text{Discount}}{\text{Market Price}} \times 100 \\ &= \frac{20}{100} \times 100 \\ &= 20\%\end{aligned}$$

4.3.2.2 Solve Problems Involving Successive Transactions**Example 5:**

The Cost Price of an article is Rs. 6,000. The shopkeeper writes the market price of the article 15% above the cost price. The sale price of that article is Rs. 4600. Find percentage discount given to the customer.

Solution:

$$\begin{aligned}\text{Cost Price} &= \text{Rs. } 6,000 \\ \text{Percentage increase} &= 15\% \\ \text{Total increase on Cost Price} &= \frac{6000 \times 15}{100} \\ &= \text{Rs. } 900 \\ \text{Market Price} &= 6000 + 900 \\ &= \text{Rs. } 6900 \\ \text{Sale Price} &= \text{Rs. } 4600 \\ \text{Discount} &= M.P - S.P \\ &= 6900 - 4600 \\ &= \text{Rs. } 2300 \\ \text{Percentage discount} &= \frac{\text{Discount}}{\text{Market Price}} \times 100 \\ &= \frac{2300}{6900} \times 100 \\ &= \frac{100}{3} = 33\frac{1}{3}\%\end{aligned}$$

Example 6:

A wholeseller sold an article to a retailer at a profit of 10%. The retailer sold it for Rs. 1897.50 at a profit of 15%. What is the cost of wholeseller?

Solution:

$$\text{Sale price of the retailer} = \text{Rs. } 1897.50 = \text{Rs. } \frac{3795}{2}$$

$$\text{Profit} = 15\%$$

$$\text{Cost price of retailer} = ?$$

$$\text{Let the cost price of the retailer} = \text{Rs. } 100$$

$$\text{Profit} = 15\%$$

$$\text{Sale price of retailer} = 100 + 15 = \text{Rs. } 115$$

$$\text{If the sale price of retailer is Rs. } 115, \text{ his cost price} = \text{Rs. } 100$$

$$\text{If the sale price of retailer is Rs. } 1, \text{ his cost price} = \frac{100}{115}$$

$$\text{If the sale price of retailer is Rs. } \frac{3795}{2}, \text{ his cost price}$$

$$= \frac{50}{123} \times \frac{3795}{12}$$

$$= 50 \times 33$$

$$= \text{Rs. } 1,650$$

$$\text{The cost price of retailer} = \text{The sale price of wholeseller}$$

$$\text{Sale price of wholeseller} = \text{Rs. } 1,650$$

$$\text{Let the cost price of the wholeseller} = \text{Rs. } 100$$

$$\text{Profit} = 10\%$$

$$\text{Sale price of wholeseller} = 100 + 10 = \text{Rs. } 110$$

$$\text{If the sale price of wholeseller is Rs. } 110, \text{ then his cost price} = 100$$

$$\text{If the sale price of the wholeseller is Rs. } 1, \text{ then cost price} = \frac{100}{110}$$

$$\text{If the sale price of wholeseller is Rs. } 1,650, \text{ the cost price is}$$

$$= \frac{100}{110} \times 1650$$

$$= \text{Rs. } 1,500$$

$$\therefore \text{The cost of wholeseller} = \text{Rs. } 1,500$$

EXERCISE 4.6

1. Haneef bought a car for *Rs.550000*. He sold it for *Rs.605000* after some time. Find his profit percentage.
2. The market price of an article is *Rs.3000*. Discount on this article is *20%*. Find the sale price of the article.
3. A manufacturer sells an article which cost him *Rs.2,500* at *20%* profit. The purchaser sells the article at *30%* gain. Find the final sale price of the article.
4. The market price of every article was reduced by *12%* in sale at a store. A cash customer was given a further *10%* discount. What price would a cash customer pay for an article marked initially as *Rs.2000*?
5. Tahir purchased two toys for his children. He buys Spider Man and Barbie Doll for *Rs.3000*, and *Rs.5000* respectively. If a discount of *20%* is given on all toys, find the amount of discount and the sale price for each toy.
6. Tufail buys some items from a store. A special discount of *15%* is offered on food items and *20%* on other items. If he purchases food worth *Rs. 1250* and other items worth *Rs. 750*, find the amount of discount and sale price of each separately.
7. A wholeseller sets his sale price by adding *15%* to his cost price. The retailer adds *25%* to the price he pays to the wholeseller to fix his Sale Price. At what price would a retailer sell an article which cost the wholeseller *Rs.400*.

4.4 INSURANCE**4.4.1 Definition of Insurance:**

Insurance is a system of protecting or safeguarding against risk or injuries. It provides financial protection for property, life, health, etc. against specified contingencies such as death, loss or damage and involving payment of regular premium in return for a policy guaranteeing. The contract is called the insurance policy. The party bearing the risk is the insurer or assurer and the party whose risk is covered is known as insured or assured.

There are many different types of insurance including health, life, property, etc. We will learn about only two types in this grade namely (i) Life insurance and (ii) Vehicle insurance

4.4.2 Solve Real Life Problems Regarding Life and Vehicle Insurance

(i) Life Insurance:

Life insurance is an agreement between the policy owner and the insurance company for an agreed time period. Insurance company agrees to pay back a sum equal to original amount and the profit at the end of agreed period or on the death or critical illness of the policy owner. In return the policy owner agrees to pay regular installments of premium.

Example 1:

Saud got a life insurance policy of Rs. 500000. Rate of annual premium is 4.5% of the total amount of the policy whereas the policy fee is at the rate of 0.25%. Find the annual premium of the policy.

Solution:

$$\begin{aligned} \text{Policy amount} &= \text{Rs. } 500000 \\ \text{Policy fee @ } 0.25\% &= \frac{25}{100} \times 500000 \times \frac{1}{100} \\ &= \text{Rs. } 1250 \\ \text{First premium @ } 4.5\% &= \frac{45}{100} \times \frac{1}{100} \times 500000 \\ &= \text{Rs. } 22,500 \\ \text{Annual premium} &= \text{First premium} + \text{policy fee} \\ &= 22,500 + 1,250 \\ &= \text{Rs. } 23,750 \end{aligned}$$

Example 2:

A man purchased a life insurance policy for Rs. 300000. The annual premium is 4.5% of the policy amount whereas policy fee is at the rate of 0.25%. Calculate the annual premium and quarterly premium at 27% of the annual premium.

Solution:

$$\begin{aligned} \text{Policy amount} &= \text{Rs. } 300000 \\ \text{Policy fee @ } 0.25\% &= \frac{25}{100} \times \frac{1}{100} \times 300000 \\ &= \text{Rs. } 750 \\ \text{First premium @ } 4.5\% &= \frac{45}{100} \times \frac{1}{100} \times 300000 \\ &= \text{Rs. } 13,500 \\ \text{Annual premium} &= \text{First premium} + \text{policy fee} \\ &= 13500 + 750 \end{aligned}$$

$$\text{Annual premium} = \text{Rs. } 14,250$$

$$\begin{aligned} \text{Quarterly premium} &= \frac{285}{\cancel{1425} \cancel{0}} \times \frac{27}{\cancel{2} \cancel{10} \cancel{0}} \\ &= \frac{285 \times 27}{2} \\ &= \text{Rs. } 3847.50 \end{aligned}$$

(ii) Vehicle Insurance:

Vehicle insurance provides a protection against risks to the vehicle. The amount of policy in this case depends upon the actual value of the vehicle.

Example 3:

Aslam got his motorcycle insured for one year. The price of his motorcycle is *Rs. 50,000* and the rate of insurance is *4.5%*. Find the amount of premium.

Solution:

$$\begin{aligned} \text{The price of the motorcycle} &= \text{Rs. } 50,000 \\ \text{Rate of insurance} &= 4.5\% \\ \text{Amount of premium} &= \frac{4.5}{100} \times 50000 \\ &= \frac{45}{10} \times \frac{1}{100} \times \cancel{500} \cancel{00} \\ &= \text{Rs. } 2,250 \end{aligned}$$

Example 4:

Khalid purchased an insurance policy for his car. The worth of the car is *Rs. 750000*. The rate of annual premium is *3%* for two years and depreciation rate is *10%*. Find the total amount he paid as premium.

Solution:

$$\begin{aligned} \text{Worth of car} &= \text{Rs. } 750000 \\ \text{Rate of annual premium} &= 3\% \\ \text{Depreciation rate} &= 10\% \\ \text{Time period} &= 2 \text{ years} \\ \text{First premium} &= 3\% \text{ of } 750000 \\ \text{First premium} &= \frac{3}{100} \times \cancel{7500} \cancel{00} \\ &= \text{Rs. } 22,500 \\ \text{Depreciation after one year} &= 10\% \text{ of } 750000 \end{aligned}$$

$$\begin{aligned}
 \text{Depreciation after one year} &= \frac{10}{100} \times 750000 \\
 &= \text{Rs. } 75,000 \\
 \text{Depreciated price after one year} &= 750000 - 75,000 \\
 &= \text{Rs. } 675000 \\
 \text{2}^{\text{nd}} \text{ premium} &= 3\% \text{ of } 675000 \\
 &= \frac{3}{100} \times 6,75,000 \\
 &= \text{Rs. } 20,250 \\
 \text{Depreciation after 2 years} &= 10\% \text{ of } 675000 \\
 &= \frac{10}{100} \times 675000 \\
 &= \text{Rs. } 67,500 \\
 \text{Depreciated price after 2 years} &= 675000 - 67,500 \\
 &= \text{Rs. } 607500 \\
 \text{Total amount paid as premium} &= 22,500 + 20,250 \\
 &= \text{Rs. } 42,750
 \end{aligned}$$

EXERCISE 4.7

1. Usman purchased a car for *Rs.1250000* and insured it for one year at the rate of *4.5%*. Find the annual premium
2. Hameed got a life insurance policy of *Rs.200000*. Find the first premium he has to pay when the rate of annual premium is *5.2%* and policy fee is *0.25%*.
3. Zahid got a life insurance policy of *Rs.500000* at the rate of *5.2%* and the policy fee is *0.25%*. Calculate half yearly premium at *52%* of the annual premium.
4. Usama insured his life for *Rs.700000*. Find annual premium at *4.5%* of the policy amount with policy fee at the rate of *0.25%*. Calculate monthly premium at *9%* of the annual premium.
5. Saud bought a car for *Rs.700000* and got it insured at *4.2%* annual premium for 3 years. Calculate how much premium he paid in 3 years if depreciation rate is *12%*.
6. A man has a car of worth *Rs.1400000*. He got it insured for a period of 2 years at the rate of *4.5%*. The depreciation rate is *10%* per year. He has to pay the premium yearly. Find the total amount of premium he has to pay for a period of 2 years.
7. Faheem got his car insured at a rate of *3%* for 3 years. The worth of his car is *Rs.850000*. Find the total amount paid as premium if rate of depreciation is *10%* per year.

4.5 INCOME TAX

4.5.1 Explain Income Tax, Exempt Income and Taxable Income

- **Income Tax:**

Income tax is imposed on the annual income of a person whose income exceeds a certain limit which is determined by the government. The rules for income tax are amended by the government from time to time.

- **Exempt Income:**

Tax exempt-income is money on which a person does not have to pay tax. In other words it is income which is not subject to income tax.

- **Taxable Income:**

Taxable income is the difference of annual income and exempted income.

$$\text{Taxable Income} = \text{Annual Income} - \text{Exempted Income}$$

Taxable Income Slabs

Sr. #	Annual Income	Rate of Tax
1.	Rs. 0 to Rs. 400,000	0%
2.	Rs. 400001 to Rs. 750000	5% of the amount exceeding Rs. 400000
3.	Rs. 750001 to Rs. 1400000	Rs. 17500 + 10% of the amount exceeding Rs. 750000
4.	Rs. 1400001 to Rs. 1500000	Rs. 82,500 + 12.5% of the amount exceeding Rs. 1400000
5.	Rs. 1500001 to Rs. 1,800,000	Rs. 95,000 + 15% of the amount exceeding Rs. 1500000
6.	Rs. 1800001 to Rs. 2500000	Rs. 140000 + 17.5% of the amount exceeding Rs. 1800000
7.	Rs. 2500001 to Rs. 3000000	Rs. 262500 + 20% of the amount exceeding Rs. 2500000
8.	Rs. 3000001 to Rs. 3500000	Rs. 362500 + 22.5% of the amount exceeding Rs. 3000000
9.	Rs. 3,500,001 to Rs. 4000000	Rs. 475000 + 25% of the amount exceeding Rs. 3500000
10.	Rs. 4000001 to Rs. 7000000	Rs. 600000 + 27.5% of the amount exceeding Rs. 4000000
11.	Rs. 7000001 and above	Rs. 1425000 + 30% of the amount exceeding Rs. 7000000

4.5.2 Solve Simple Real Life Problems Related to Individual Income Tax Assessee

Calculation of Income Tax is illustrated with the help of following examples.

Use the above table for calculations.

Example 1: Calculate the amount of Income Tax at 5% of a person whose income is Rs.578,000 for the year.

Solution:

$$\text{Income of the person} = \text{Rs. } 578,000$$

The amount lies in Taxable income slab at Sr. # 2

i.e, 5% of the amount exceeding Rs. 400,000

$$\begin{aligned} \text{Taxable income} &= 578,000 - 400,000 \\ &= \text{Rs. } 178,000 \end{aligned}$$

$$\begin{aligned} \therefore \text{Income Tax @ } 5\% &= \frac{5}{100} \times 178,000 \\ &= \text{Rs. } 8,900 \end{aligned}$$

Example 2: The annual income of a person is Rs. 1,885,000. Calculate the amount of income tax if he paid Zakat Rs. 47,125.

Solution:

$$\text{Total income for the year} = \text{Rs. } 1,885,000$$

$$\text{Zakat} = \text{Rs. } 47,125$$

$$\begin{aligned} \text{Taxable income} &= 1,885,000 - 47,125 \\ &= \text{Rs. } 1,837,875 \end{aligned}$$

This amount lies in Taxable income slab at Sr. # 6

i.e., Rate of tax is Rs.140000 + 17.5% of the amount exceeding Rs.1,800,000

$$\begin{aligned} \therefore \text{Income exceeding Rs. } 1,800,000 &= 1,837,875 - 1,800,000 \\ &= \text{Rs. } 37875 \end{aligned}$$

$$\text{Income tax @ } 17.5\% = \frac{37875 \times 17.5}{100}$$

$$= \text{Rs. } 6628.12$$

$$\begin{aligned} \therefore \text{Total income tax} &= 140,000 + 6628.12 \\ &= \text{Rs. } 146628.12 \end{aligned}$$

Example 3: The annual income of a person is *Rs.2,085,000*. He paid zakat *Rs.52,125*. Calculate his income tax on his income.

Solution:

$$\text{Total income of a year} = \text{Rs. } 2,085,000$$

$$\text{Zakat} = \text{Rs. } 52,125$$

$$\begin{aligned} \text{Taxable income} &= 2,085,000 - 52,125 \\ &= \text{Rs. } 2,032,875 \end{aligned}$$

This amount falls in the taxable income slab at Sr. # 6

i.e, *Rs.140,000* + 17.5% of the amount exceeding *Rs.1,800,000*

$$\begin{aligned} \text{Amount exceeding Rs. } 1,800,000 &= 2,032,875 - 1,800,000 \\ &= \text{Rs. } 232,875 \end{aligned}$$

$$\begin{aligned} \text{Income tax @ 17.5\% of Rs.232,875,} &= \frac{232875 \times 175}{100 \times 10} = \text{Rs.40753.125} \\ &= \text{Rs. } 40753 \end{aligned}$$

$$\begin{aligned} \therefore \text{ Total income tax to be paid} &= 140,000 + 40753 \quad (\text{From slab at Sr. \# 6}) \\ &= \text{Rs. } 180,753 \end{aligned}$$

Example 4: A person earns *Rs.385,000* in a year. Calculate his income tax for the year.

Solution:

$$\text{Annual income} = \text{Rs.385,000}$$

Since this amount falls in the taxable income slab at Sr.# 1

i.e, 0% tax, it means he has to pay no income tax for the year.

EXERCISE 4.8

Solve the following questions by using the table of taxable income slabs.

1. The annual income of a person is *Rs.420,000*. Calculate his income tax when tax rate is 5%.
2. Calculate income tax of a person whose annual income is *Rs.1,085,000* and tax rate is 10%.

3. Annual salary of a person is *Rs. 1,475,000*. Calculate the annual income tax when tax rate is *12.5%*.
4. Calculate income tax of a person whose annual income is *Rs. 1,650,000*. The rate of tax is *15%*.
5. The annual income of a person is *Rs. 2,350,000*. Calculate his income tax when tax rate is *17.5%*.
6. Calculate income tax of a person whose annual income is *Rs. 2,875,000*. The rate of tax is *20%*.
7. A salaried person has his annual income *Rs. 3,375,000*. Calculate his income tax when tax rate is *22.5%*.
8. The annual income of an individual is *Rs. 3,987,500*. The tax rate is *25%*. Calculate the income tax of the person on his income.
9. A person earns *Rs. 12,735,000* from his business. Calculate his income tax on his income when tax rate is *30%*. If tax has been deducted tax at source amounting *Rs. 200,000*, how much money he has to pay now?

REVIEW EXERCISE 4

1. Four options are given against each statement. Encircle the correct one.
 - i. Proportion means:
 - (a) equality of two ratios
 - (b) equality of quantities
 - (c) inequality of two ratios
 - (d) inequality of quantities
 - ii. If the rate of conversion is $1\$ = \text{Rs. } 104$ then $\text{Rs. } 2600 = \$$:
 - (a) \$25
 - (b) \$250
 - (c) \$2500
 - (d) \$2.50
 - iii. An institution which accepts deposits, makes business loans and offers related services is called:
 - (a) bank
 - (b) leasing company
 - (c) ATM machine
 - (d) credit card company

- iv. ATM stands for:
 (a) Account Transfer Machine (b) Automated Teller Machine
 (c) Auto cash Transfer Machine (d) Account Teller Machine
- v. A person who buys life insurance from an insurance company is called:
 (a) insured (b) insurer
 (c) lesser (d) beneficiary
- vi. A person who deposits money in a bank is called:
 (a) account holder (b) visitor
 (c) borrower (d) drawer
- vii. The cost price of a toy car is *Rs.100*. If it is sold at 10% discount then the selling price of the toy car:
 (a) *Rs.90* (b) *Rs.110*
 (c) *Rs.80* (d) *Rs.120*
- viii. The relation between two or more proportions is called:
 (a) Compound Proportion (b) Direct Proportion
 (c) Inverse Proportion (d) Indirect Proportion
- ix. The rate of zakat is:
 (a) 10% (b) 2.5%
 (c) 25% (d) 0.25%
- x. Income tax at the rate of 4% on the income of *Rs. 200000* is:
 (a) *Rs.8000* (b) *Rs.80000*
 (c) *Rs.4000* (d) *Rs.2000*
2. Define the following:
- i. Proportion. ii. Compound Proportion iii. Partnership
 iv. Commercial Bank v. Negotiable instruments.
3. What is difference between cheque, Demand Draft and Pay order.
4. The price of a tricycle is *Rs.4000*. If 16% sales tax is charged, then calculate the amount of sales tax on 30 such tricycles.
5. A person has earned *Rs.8,000,000* in a year. The tax deducted at source is *Rs.150,000* and Zakat deducted *Rs.200,000* and tax rate 30%. Calculate his income tax for the year. (Use taxable income slabs)
6. Ammar insured his life for *Rs.1,000,000* at the rate of 5% per year. Find the amount of annual premium he has to pay.
7. A factory marked prices of the articles 25% above the cost price. The Cost Price of an article is *Rs.5000* and its selling price is *Rs.4500*. Find the discount % given to the customer.

SUMMARY

- The relationship between two or more proportions is known as compound proportion.
- A business in which two or more partners run the business and are responsible for profit or loss is called partnership.
- When a person dies, then the assets left by him is called inheritance.
- Banking is a business activity of accepting and safeguarding the money and earning a profit by lending out this money.
- The function of a bank which accepts deposits, provides loans and services to the clients is known as commercial banking.
- An account on the basis of profit and loss is known as PLS bank account.
- Current deposited account is usually opened by businessmen who have number of deposits and withdrawals regularly. It is a running account without any interest.
- PLS term deposit holder shares profit and loss on the rate determined by the bank after every six months.
- A foreign currency account is the account maintained in the currency other than Pakistani currency.
- A cheque is a written order that instructs a bank to pay the specific amount from a specified account to the holder of the cheque.
- Demand draft is a method used by individuals to make transfer payments from one bank account to another.
- Pay order is a document which instructs a bank to pay a certain amount to a third party and it is issued by the bank on the request of its customer.
- Online banking is the use of internet by the banks to assists their customers.
- An automated teller machine (ATM) is an electric device that allows a bank's customers to make cash and check their account balance.
- Credit card is a thin plastic card used to buy articles. Visa and Master cards are used worldwide for making payments. These are the names of global credit companies.
- Debit Card is a plastic payment card that provides card holder electronic access to his bank account at anytime and anywhere.
- The extra money which the bank pays for the use of our amount is called profit on the deposit.

- The extra money which a bank receives from a client on borrowed money is known as mark-up.
- Principal amount is the amount we borrow or deposit in the bank.
- The rate at which the bank gives share to its account holder is known as profit/mark-up rate.
- The time for which a particular amount is invested in a business is known as period
- Overdraft is a borrowing facility provided by a bank to account holder to withdraw some amount excess of his original balance.
- A lease is contractual agreement between the lessee (user) to pay the lessor (owner) for the use of an asset.
- Discount means to reduce the price of an article in its market price.
$$\text{Discount} = \text{Market price} - \text{Sale price}$$
- Insurance is a system of protecting or safeguarding against risk or injuries.
- Life insurance is an agreement between the policy owner and the insurance company for an agreed time period.
- Vehicle insurance provides a protection against risk to the vehicle.
- Income tax is imposed on the annual income of a person whose income exceeds a certain limit which is determined by the government.
- The income which is not subject to federal income tax is known as tax exempt income.
- Taxable income is the difference of annual income and exempted income i.e.,
$$\text{Taxable income} = \text{Annual income} - \text{Exempted income}$$