FIN 111

Financial Mathematics

Secondary Level

The Ministry of Education, Kingdom of Bahrain has decided to teach this book in secondary schools

Financial Mathematics (1)

مال111

For Secondary Education

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THE KING OF THE KINGDOM OF BAHRAIN

Content

Introdcution

Studying the financial mathematics "1" course, the student acquires many skills that qualify him to join university education and the requirements of the labor market.

After studying the financial mathematics course, the student acquires many important skills and competencies in the commercial field. Among the competency's student acquires is the transfer of foreign currencies to local and local to foreign currencies. In addition to calculating the salaries of employees and workers' wages in all possible ways.

There are also other competencies such as pricing the goods in different ways, as well as preparing the invoice in the two cases of delivery of the goods in the place of the buyer or the seller's shop. There is also the topic of simple interest that paves the way for the study of financial mathematics" 2".

The topic that the student studies in this course touch on all aspects of life that are useful in the scientific and practical side.

General Objectives

At the end of the course, students should be able to:

▶ Calculate Currency Exchange.

▶ Compute the payroll of labors and workers.

▶ Calculate the Pricing Goods, Discount and Prepare the Invoice.

▶ Calculate simple interest and discount.

Book Aid

Where possible, we have included graphic illustrations, mind maps, tables and diagrams to assist the students in their learning. We have also highlighted the meaning of certain concepts through the use of specific symbols called icons. The purpose of these icons is to emphasize and draw their attention to important aspects of the work and to highlight the activities. The various icons have the following meanings:

✏️	**1**	**Definition**	This icon helps you identify and understand important concepts.
💡	**2**	**Important Points**	Key concepts that need to be remembered.
👍	**3**	**Tips**	Handy tips to make your work easier.
🧩	**4**	**Class Activity**	This icon indicates that you must perform an activity and complete it successfully before proceeding with the lesson.
📖	**5**	**Reading**	Suggested additional reading to comprehend the topic just studied.
🔍	**6**	**Internet Searching**	Recommended links for students.
📝	**7**	**Examples**	Practical questions solved to help understand the topic of the lesson.

Unit 1

Review Numbers and Currency Exchange

Learning Objective

1

By the end of this unit, the student should be able to:

- ► write the whole and decimal numbers.
- ► place value and our number system.
- ► round the whole numbers.
- ► money and currency exchange

1.1 Write the Whole Numbers

Introduction

Suppose you are in sales meeting and the marking manager presents a report of the sales for the previous quarter, the projected sales for the current quarter, and the projected sales for the entire year, how would you record these figures in the notes you are taking for the meeting? You will need to have a mental picture of the place-value structure of our number system.

Read Whole Numbers:

1	One	11	eleven	10	ten	21	twenty-one
2	Two	12	twelve	20	twenty	22	twenty- two
3	Three	13	thirteen	30	thirty	33	thirty-three
4	Four	14	fourteen	40	forty	44	forty-four
5	Five	15	fifteen	50	fifty	55	fifty-five
6	Six	16	sixteen	60	sixty	66	sixty-six
7	Seven	17	seventeen	70	seventy	77	seventy-seven
8	Eight	18	eighteen	80	eighty	88	eighty- eight
9	Nine	19	nineteen	90	ninety	99	ninety- nine

100	one-hundred
2,000	two-thousand
3000,000	three-million
4000,000,000	four-billion
5000,000,000,000	five-trillion

How to write whole number?

a- Begin recording digits from left to right.

b- Insert a comma at each period name.

c- Every period after the first period must have three digits. Insert zeros as necessary.

Read decimal numbers:

0.1	Tenths
0.01	Hundredths
0.001	Thousandths
0.0001	Ten -thousandths
0.00001	Hundred-thousandths
0.000001	Millionths
0.0000001	Ten-Millionths
0.00000001	Hundred- Millionths

How to write decimal number?

a- Read or write the whole- number part to the left of the decimal point.

b- Use the word and for the decimal point (**.**).

c- Read or write the decimal part to the right of the decimal point.

d- Read or write the place name of the rightmost digit.

Example 1-1-1:

▶ Write the number **1,890,512.627** in letters:

Millions		Thousands			Units			Point	Tenths	Hundredths	Thousandths
		1	8	9	0	5	1	2	.	6	2	7

One million, eight hundred ninety thousand, five hundred **twelve <u>and</u>** six hundred twenty-seven thousandths.

Example 1-1-2:

▶ Write the following numbers in letters:

a- 47,203   =   Forty-seven thousand, two hundred three.

b- 5,821,496   =   Five million, eight hundred twenty-one thousand, four hundred ninety-six.

c- 0.375   =   Three hundred seventy-five thousandths.

d- 4.6   =   Four **and** six-tenths.

e- $ 234.75   =   Two hundred thirty-four <u>dollar</u> and seventy-five **cents**.

f- BD 20.825 =   Twenty **dinar** and eight hundred twenty -five **fils**.

Exercises 1-1-1:

1- Write the word name for these numbers:

    a) 150
    b) 8921
    c) 1085514
    d) 40.451
    e) BD 0.025
    f) 8.15
    g) 1225.4211
    h) BD 516800
    i) BD 762.150
    j) $ 175.64

2- Write the number of the following:

a) Twenty billion, fifeen million, two hundred forty.

b) Ten billion, five hundred forty-two million,six hundred thounsand.

c) Eight and tenths.

d) Five hunderd thirty nine thousandths.

e) One hundred thiry-seven and twenty three-hundredths.

1.2 Place Value and Number System

a- Whole numbers and the place-value system

This text will prepare you to enter the business world with mathematical tools for a variety of career paths. The business topics are based on mathematical knowledge, so it is important to begin with reviewing the mathematical and problem-solving skills that you will need for the coming chapters.

In most businesses, arithmetic computations are done on a calculator or computer, even so, every businessperson needs a thorough understanding of mathematical concepts and a basic number sense to make the best use of a calculator.

Our system of numbers, the decimal-number system, uses ten symbols called digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, numbers in the decimal system can have one or more digits. Each digit in a number that contains two or more digits must be arranged in a specific order to have the value we intend for the number to have, one set of numbers in the set of whole numbers: 0, 1, 2, 3, 4.

Most business calculation involving whole numbers include one or more of four basic mathematical operations: addition, subtraction, multiplication and division.

What business situations are required to read and write whole numbers?

Communication is one of the most important skills of successful businesspersons; both the giver and the receiver of communication must have the same interpretation for the communication to be effective. That is why understanding terminology and the meanings of symbolic representations is an important skill.

Beginning with the ones place on the right, the place values are grouped in groups of three places. Each group of three place values is called a period, each period has a name and a ones place, a tens place, and a hundred place, in a number, the first period from the left may have less than three digits. In many cultures, the periods are separated with commas.

Reading number is based on an understanding of the place-value system that is part of our decimal-number system. The figure below shows that system applied to the number.

	One	1
Units	Ten	10
	Hundred	100
	Thousand	1,000
Thousands	Ten thousand	10,000
	Hundred thousand	100,000
	Million	1,000,000
Millions	Ten Million	10,000,000
	Hundred Million	100,000,000
	Billion	1,000,000,000
Billions	Ten Billion	10,000,000,000
	Hundred Billion	100,000,000,000
	Trillion	1,000,000,000,000
Trillions	Ten Trillion	10,000,000,000,000
	Hundred Trillion	100,000,000,000,000

Example 1-2-1:

▶ Find the place value of the number 381,345,287,369,021.

Trillions			Billions			Millions			Thousands			Units		
Hundred Trillion	Ten Trillion	Trillion	Hundred Billion	Ten Billion	Billion	Hundred Million	Ten Million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundred	Ten	One
3	8	1	3	4	5	2	8	7	3	6	9	0	2	1
381 trillion			345 billion			287 million			369 thousand			021		

Exercises 1-2-1:

1-Find the place value of the following numbers:

a- 56,326

b- 8,971,456

c- 16,080,573

d- 789,454,002

e- 3,765,010,783

f- 54,079,887,546

g- 200,471,050,120

h- 4,156,966,432,251

i- 80,879,674,366,377

j- 100,025,912,706,454

	Trillions			Billions			Millions			Thousands			Units		
	Hundred Trillion	Ten Trillion	Trillion	Hundred Billion	Ten Billion	Billion	Hundred Million	Ten Million	Million	Hundred thousand	Ten Thousand	Thousand	Hundred 100	Ten	One 1
a.															
b.															
c.															
d.															
e.															
f.															
g.															
h.															
i.															
j.															

b- Decimals and the place-value system

Decimals are another way to write fractions. We use decimals in some form every day. Even our money system is based on decimals. Calculators use decimals, and decimals are the basis of percentages, interest, markup, and markdowns.

One money system, which is based on the dollar dinars or riyal, uses the decimal system. In the decimal system, as you move right to left from one digit to the next, the place value of the digit increases by 10 times (multiply by 10). As you move left to right from one digit to the next, the place value of the digit gets 10 times smaller (divide by 10). The place value of the digit to the right of the ones place is 1 divided by 10.

There are several ways of indicating 1 divided by 10, in the decimal system, we write 1 divided by 10 as 0.1.   1 2 3 4 5 6 7 8 9 10

Decimal Point	Hundred -millionths	0.00000001
	Ten-millionths	0.0000001
	Millionths	0.000001
	Hundred-thousandths	0.00001
	Ten-thousandths	0.0001
	Thousandths	0.001
	Hundredths	0.01
	Tenths	0.1
Units	One	1
	Tens	10
	Hundred	100
Thousands	Thousand	1,000
	Ten Thousand	10,000
	Hundred Thousand	100,000
Millions	Millions	1000,000
	Ten Million	10,000,000
	Hundred Million	100,000,000
Billions	Billions	1000,000,000
	Ten Billion	10,000,000,000
	Hundred Billion	100,000,000,000
Trillions	Trillions	1000,000,000,000
	Ten Trillion	10,000,000,000,000
	Hundred Trillion	100,000,000,000,000
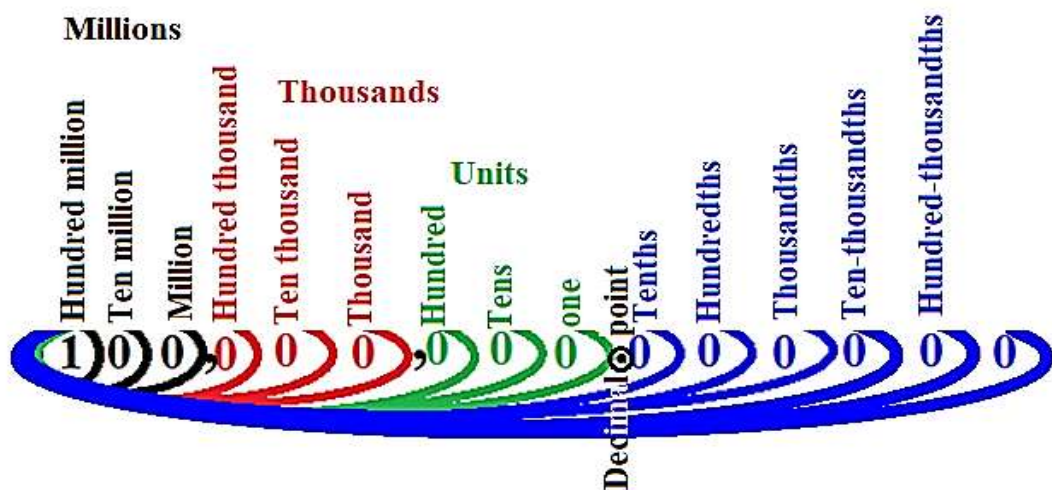
Example 1-2-1:

► Find the place value of the number 12,315.6274

	Millions			Thousands			Units			Decimal System					
	Hundred millions	Ten millions	Million	Hundred thousands	Ten thousands	Thousand	Hundred	Tens	One	Decimal point	Tenths	Hundredths	Thousandths	Ten-thousandths	Hundred-thousandths
					1	2	3	1	5	.	6	2	7	4	0

Exercises 1-2-2:

► Find the place value of the following numbers:

a- 326.0153

b- 8,670.451

c- 15,480.25

d- 6,450,872.125

	Millions			Thousands			Units			Decimal System					
	Hundred millions	Ten millions	Million	Hundred thousands	Ten thousands	Thousand	Hundred	Tens	One	Decimal point	Tenths	Hundredths	Thousandths	Ten-thousandths	Hundred-thousandths
a.															
b.															
c.															
d.															

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1.3 Round Whole Number

In the business world and in real life situations, sometimes we want to round numbers. The rounded number is an approximate number that is obtained from rounding an exact amount.

So often rough or rounded figures are used. A rounded number is not an exact amount. It is an approximate number instead. Rounding a number to a specific place, which may be the first left in a number.

    a. Find the digit in the specified place (first dignitaries, ten, hundred, thousand etc.).

    b. Look at the next digit to the right

        ▶ If this digit is less than 5, place it and all digits to its right with zeros.

Example 1-3-1:

▶ Round 2647 to the nearest hundred.

$$2 \quad \textbf{6} \quad 4 \quad 7$$
$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$
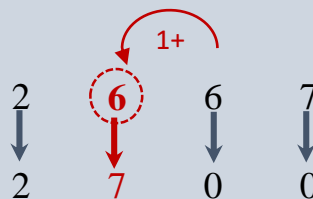$$2 \quad 6 \quad 0 \quad 0$$
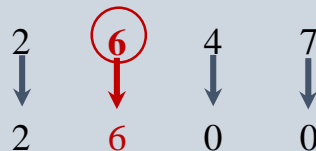
▶ If this digit is 5 or more, add 1 to the digit in the specified place with zeros.

Example 1-3-2:

▶ Round 2667 to the nearest hundred.

$$\qquad\qquad 1+$$
$$2 \quad \textbf{6} \quad 6 \quad 7$$
$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$
$$2 \quad 7 \quad 0 \quad 0$$

Example 1-3-3:

▶ Round 37,439 to first digit.

$$3 \quad \overset{1+}{7} \quad , \quad 4 \quad 3 \quad 9$$
$$4 \quad 0 \quad , \quad 0 \quad 0 \quad 0$$
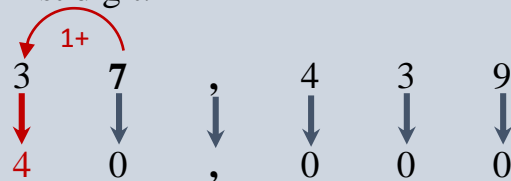
- The first digit on the left is 3.
- The next digit to the right is 7.
- 7 is more than 5, so increase 3 + 1 to get 4 and replace all digits to the right of 4 with zeros.

Example 1-3-4:

▶ Round 34,439 to first digit.

$$3 \quad 4 \quad , \quad 4 \quad 3 \quad 9$$
$$3 \quad 0 \quad , \quad 0 \quad 0 \quad 0$$
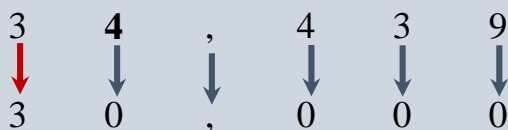
- The first digit on the left is 3.
- The next digit to the right is 4.
- 4 is less than 5, so replace it to 3and all digits to its right zeros.

* If this digit is more than 5, add 1 to the digit in the specified place with zeros.

* If this digit is less than 5, replace it and all digits to its right with zeros.

Exercises 1-3-1:

▶ Find the place value of the number 381,345,287,369,021.

Round Decimals

As with whole numbers, we often need only an approximate amount. The process for rounding decimals is similar to rounding whole numbers.

How to round to a specified decimal place?

  a. Find the digit in the specified place (first dignitaries, ten, hundred, thousand etc.).

  b. Look at the next digit to the right

    ▶ If this digit is less than 5, eliminate it and all digits to its right with zeros.

Example 1-3-5:

▶ Round 17.3234 to the nearest hundredths.

    • If this digit is 5 or more, add 1 to the digit in the specified place, and eliminate all digits to its right.

Example 1-3-6:

▶ Round 17.3284 to the nearest hundredths.

Example 1-3-7:

► Round the number to the specified place.

a) 14.342 to the nearest tenth.

1	4	•	3	4	2
↓	↓	↓	↓		
1	4	•	3		

b) $ 28.465 to the nearest cent.

2	8	•	4	6	5
↓	↓	↓	↓	↓	1+
2	8	•	4	7	

c) BD 1,235.25124 to the nearest fils.

1	,	2	5	3	•	2	5	1	4
↓	↓	↓	↓	↓	↓	↓	↓	↓	
1	,	2	5	3	•	2	5	0	

Exercises 1-3-2:

► Round the following numbers:

a) 3,784.921 to the nearest thounsand.

b) 52,973 to the nearest hundred.

c) 6.098 to the nearest ten.

d) 29,000,459 to the first digit.

e) $493.9126 to nearest dollar.

f) 42.3784 to the nearest thousand.

1.4 Money and the Currency System

The **history of currency** in any country is an integral part of the history of that country. It reflects not only the different stages of that history, but also the strong relations enjoyed by the country with many different countries in the world.

Kingdom of Bahrain was the first country in the Gulf to recognize the use of coinage as a means of enhancing trading and financial activity in the very early days. Indeed, the use of coinage made a strong contribution to Bahrain's early reputation as a commercial center. Strategically located on one of the world's oldest trading routes between East and West, Kingdom of Bahrain had already become an important transit point offering traders a safe anchorage and a reliable supply of food and water, while its coastal waters were the source of the world's finest natural pearls. Over the centuries, practically every form of money passed through the hands of Bahrain's merchants, enabling Bahrain to claim a unique economic and political status in the region. The use of many forms of money continued until 1965 when the Kingdom of Bahrain introduced its own currency, the Bahraini Dinar (BHD). The Government in Bahrain is eager to encourage and support commerce and finance, the country was ideally placed to emerge as the region's major international financial center.

Reading 1-4-1:

In 1964, the Bahrain Currency Board was established and issued a new family of Bahraini Dinar banknotes and coins on 7th October 1965. Read more about currency issue.

The Currency System:

Most countries in the world have their own currency system. This system means that every country has its own money that is divided into smaller parts. Usually, this will be according to the following two systems :

► Centesimal System - this is a system with a unit of currency that is equivalent to 100 smaller units. For example, there are 100 halala in a Saudi Riyal and 100 cents in a One-dollar US. Most countries use this system.

► Millesimal System - this is a system with a unit of currency equivalent to 1,000 smaller units. For example, the Bahraini Dinar is divided into 1,000 Fils. A few countries use this system.

Activity 1-4-1:

► List three other currencies you are aware of for each system.

Rate of Exchange:

To encourage trade exchange between all countries of the world, it is used at the level of individuals, institutions or countries, Currency conversion according to the daily exchange rate where the currency exchange rate is determined by supply and demand at a certain time in addition to other factors.

The exchange rate is defined as the number of monetary units by which one unit of local currency is exchanged for a foreign one.

Convert local currency to foreign currency in any country by displaying currency exchange rates in newspapers and websites at the buying, selling and conversion rate. For example, in the Kingdom of Bahrain we find the value of the US dollar in Bahraini dinars.

Foreign Currency			Selling BHD	Buying BHD
	USA Dollar	USD	0.378000	0.375000
	Euro	EUR	0. 474000	0.466600
	Japanese Yan	JPY	0.003632	0.363500
	Chinese Yuan Renminbi	CNY	0.058267	0.056451
	British Pound	GBP	0.524150	0.506650
	Indian Rupee	INR	0.005918	0.005168
	Thai Baht	THB	0.011938	0.108792
	Malaysian Ringgit RM	MYR	0.099942	0.084192
	Saudi Arabian Riyal	SAR	0.100650	0.100000
	Emirati Dirham	AED	0.103900	0.101400
	Kuwaiti Dinar KD	KWD	1.252950	1.238950
	Omani Rial	OMR	0.992490	0.968490
	Egyptian Pound	EGP	0.0240441	0.0220521
	Jordanian Dinar	JOD	0.531800	0.531800

Example 1-4-1:

► Use the above currency exchange table in the following currency conversion:

You have BHD 1000 Bahraini Dinars and would like to convert it to USA Dollar.

$$\frac{1 \times 1000}{0.378000} = \$2645.5026 = \$2645.50$$

BHD	USD
0.378	1
1000	??

- The teller in Bahrain will sell the foreign currency, so we choose the selling price BHD 0.378000.
- When we want to get the foreign currency from the teller, we will divide the amount in Bahraini dinars by the selling rate.

Example 1-4-2:

► Use the currency exchange table in the following currency conversion:

After you return from travel, you have EGP 2500 Egyptian pounds and you want to get the Bahraini dinar.

$$\frac{2500 \times 0.0220521}{1} = \textbf{BHD55.13025} \sim$$

$$\textbf{BHD55.130}$$

BHD	EGP
0.0220521	1
??	2500

- The teller in Bahrain will buy the foreign currency, so we choose the buying price BHD 0.0220521.
- When we want to convert our foreign currencies into Bahraini Dinars from the teller, we multiply the foreign currency by the buying rate.

Example 1-4-3:

► Use the currency exchange table in the following currency conversion:

Mariam has GBP 1850 British Pound and she wants to convert it into Indian rupees.

BHD	GBP
0.506650	1
??	1850

$$= \frac{1850 \times 0.506650}{1} = BHD937.3025 \sim BHD937.303$$

BHD	INR
0.005918	1
937.303	??

$$= \frac{1 \times 937.303}{0.005918} = INR158381.7168 \sim INR158381.72$$

- First the teller in Bahrain will buy the foreign currency, so we choose the buying price BHD0.005168. then the teller in Bahrain will sell the foreign currency, so we choose the selling price BHD 0.005918.

Exercises 1-4-2:

1- Use the above currency exchange table in the following currency conversion:
   a) You have BHD 250 and would like to convert it to Euro.
   b) You have MYR 7,500 and you want to get the Bahraini dinar.
   c) Manal has KWD 950 and she wants to convert it into USA Dollar.

2- £1,000 to BHD if the rate of exchange is (£1 = BD0.536).

3- BHD1,500 to EURO if the rate of exchange is (1 Euro = BD0.474).

General Questions

1Q: Write the word name for these numbers:
  a) 4830
  b) 51.860
  c) 6.75
  d) BD 732600
  e) $ 195.51

2Q: Write the number of the following:
  a) Five billion, fifeen million, two hundred six.
  b) Two billion, three hundred thirty -two million, four hundred thounsand.
  c) One and tenths.
  d) Twenty hunderd forty seven thousandths.
  e) Eight hundred thiry- nine and twenty five -hundredths.

3Q: Find the place value of the following numbers:

  a) 45,097,660,352
  b) 600,852,060,230
  c) 5,191,444,37,750
  d) 60,654,897,753,235
  e) 300,035,612,502,759

S. No.	Trillions			Billions			Millions			Thousands			Units		
	Hundred Trillion	Ten Trillion	Trillion	Hundred Billion	Ten Billion	Billion	Hundred Million	Ten Million	Million	Hundred thousand	Ten Thousand	Thousand	Hundred	Ten	One
a)															
b)															
c)															
d)															
e)															

4Q: Find the place value of the following numbers:

a- 16,480.75

b- 8,450,872.135

Millions			Thousands			Units			Decimal System					
Hundred million	Ten million	Million	Hundred thousand	Ten thousand	Thousand	Hundred	Tens	One	Decimal point	Tenths	Hundredths	Thousandths	Ten-thousandths	Hundred-thousandths

5Q: Round the following numbers:
   a) 29,000,459 to the first digit.

   b) $493.9126 to nearest dollar.

   c) 42.3784 to the nearest hundred.

6Q: Convert by using draft rate, which you can get it from today's newspaper:
   ▶ BHD 4,620   to MYR

   ▶ JPY 789   to BHD

   ▶ CNY 98440   to EUR

7Q: Use the daily exchange rate in the following currency conversion:
   a) Change BHD1,250 to if the rates of exchange are (EP£ 1=BD0.080).

   b) Bahraini family decided to travel to Kuwait. They need to change BHD 2,000 to KD. Find the amount they will get If the rate of exchange.

   c) Sara Ali wants to send BHD 500 to her sister, which she learns in London as draft. How many pounds sterling did she send to her sister if the exchange rate transfer rate?

8Q: Fahad converted BHD 5,000 into Emirati Dirham to buy a car from Dubai, but he did not buy the car, and after returning to Bahrain, he converted the amount into Bahraini dinars. How much did Fahad lose?

9Q: Use the following link to answer the questions:

https://forms.office.com/Pages/ResponsePage.aspx?id=DQSIkWdsW0yxEjajBLZt
rQAAAAAAAAAAAa__Y9zjKhURUxQTUFGUkpKMDAxRjEyMFI1OTRH
TDFRNy4u

Unit 2

Salaries and Wages System

Learning Objective

2

By the end of this unit, the student should be able to:

- ► identify system of payment.
- ► methods of payment – hour-week-month -over time.
- ► methods of payment – piece – rate.
- ► calculating payroll by commission - bonus.
- ► calculating deductions and adjustments to pay.

2.1 System of Payment

Introduction

Every organisation employing personnel will be involved in the calculation of gross and net wages or salaries. In large companies this will be done by specialist staff using computers while in a small one it might be done by one person as part of general office duties. Whatever the situation, the principle is common to all organization.

Wages and salaries in the Kingdom of Bahrain are regulated by law Decree No (48) of 2010 Promulgating Civil Service Law and Law No (36) of 2012 The promulgation of the labor law in the private sector.

You should know that the terms 'wages' and 'salaries' have the same meaning, but wages is usually applied to hourly-paid or weekly-paid staff, while salaries is used for employees paid monthly.

There are many ways of calculating salary and wages. The following are payment methods that can be used by an organisation:

▶ Payment by the hour, week, month and annually.

▶ Piece-rate system and Bonus systems.

▶ Commission based upon quantity sold.

▶ Annual salary.

Activity 2-1-1:

What method of payment that has been used in the Kingdom of Bahrain for the following sectors:

▶ Ministries.

▶ Banks.

▶ Companies and small businesses.

2.2 Payroll by Hour and Week

Payment per hour or week; in which an employee is paid according to the number of hours or weeks worked together with any overtime or bonus payment. Sometimes, as an alternative, a basic minimum wage is paid supplemented by a commission based upon the number of sales achieved by the employee.

The worker's wage should be determined in accordance with the individual or collective labor contract or the work regulations at the establishment. In case the wage is not determined in such manners, the worker shall be entitled to a wage calculated for the work performed of the same nature if any. Where no such wage exists, it should be calculated in accordance with the business practice retained in the occupation in the relevant sector. If no such practices exist, the competent court shall estimate the wage due to the worker in accordance with the requirements of equity. This method shall be retained in determining the type of the service to be performed by the worker.

Decided article (38) Wages may be calculated by the hour, day, week, month, on a piece-rate or per production. As the articles (51,53) stated a worker may not be effectively employed for more than **48 hours** per week for more than **eight hours** per day unless otherwise agreed upon, provided the effective working hours do not exceed ten hours per day, and the Muslim worker may not be employed during the month of Ramadan for more than **six hours** per day, or **36 hours** per week. Article (54) of the Labor Law stipulates the worker shall receive for each additional working hour a wage equivalent to his due wage plus at least **25 % for hours worked during the day**, and at least **50% for hours worked during the night**. An employer may require a worker to work on his weekly day of rest if so, required by the circumstances of the work and in this case the worker shall have the choice between receiving an additional wage equivalent to 150% of his normal wage or another day for rest.

Example 2-2-1:

► An employee is engaged for 46 hours during the day a week at a basic rate of BD2.500 per hour. Calculate the gross wage received during the period.

Days	FRI	SAT	SUN	MON	TUE	WED	THU
Hours	0	8	8	6	8	8	8
O.T during the day	0	0	0	0	0	0	0
O.T during the night	0	0	0	0	0	0	0

Note: (O.T) it means over time.

Solution:

Number of hours   = 8 + 8 + 6+ 8+ 8 +8 = 46 hours

Total Regular Wage = 46 × BHD2.500

= BHD115.000

Example 2-2-2:

► Jameel worked the following hours during the week in Jan 2021:

Week	FRI	SAT	SUN	MON	TUE	WED	THU
1	1 JAN	2 JAN	3 JAN	4 JAN	5 JAN	6 JAN	7 JAN
	0	8	8	7	8	8	8
2	8 JAN	9 JAN	10 JAN	11 JAN	12 JAN	13JAN	14 JAN
	0	8	8	8	8	8	5
3	15 JAN	16 JAN	17 JAN	18 JAN	19 JAN	20 JAN	21 JAN
	0	6	8	8	8	8	8
4	22 JAN	23 AN	24 JAN	25 JAN	26 JAN	27 JAN	28 JAN
	0	8	8	8	8	8	8
5	29 JAN	30 JAN	31 JAN	1 FEB	2 FEB	3 FEB	4 FEB
	0	8	8	8	8	6	8

Calculate the wage for the month of January 2021, the average hourly wage is

BHD 2.800.

Solution:

Number of hours: week 1 = 8 + 8 + 7 + 8+ 8 +8 = 47 hours

week 2 = 8 + 8 + 8 + 8+ 8 + 5 = 45hours

week 3 = 6 + 8 + 8 + 8+ 8 + 8 = 46 hours

week 4= 8 + 8 + 8 + 8+ 8 + 8 = 48 hours

week 5 = 8 + 8   = 16 hours

Total Working Hours = 202 hours

Total Regular Wage = 202 × 2.800   = BHD565.600

Example 2-2-3:

► Ahmed worked the following hours during the week in:

Days	FRI	SAT	SUN	MON	TUE	WED	THU
Hours	8	8	8	6	8	8	8
O.T during the day	0	2	0	3	0	2	0
O.T during the night	0	0	1	0	2	3	0

Calculate the total wage during the week, if you know that the average hourly wage is BHD 3.000.

Solution:

- Regular Wage = (8 + 8 + 8 + 6 + 8+ 8 + 8) × 3   =   BHD162.000

- Wage of Weekly rest day (Friday) = 8 × 3 × 1.50   = BHD 36.000

- Over Time of during the day   = (2+ 3 +2) × 3 × 1.25 = BHD 26.250

- Over Time of during the night = (1+ 2 +3) × 3 × 1.50 = BHD 27.000

- Total Wages =162.000 + 36.000 + 26.250 + 27.000   = BHD 251.250

Exercises 2-2-1:

► An employee is engaged for 47 hours during a week at a basic rate of BHD3.500. Calculate the wage received during the period?

Exercises 2-2-2:

Faisal worked the following hours during the week in:

Days	FRI	SAT	SUN	MON	TUE	WED	THU
Hours	0	7	8	6	8	7	8
O.T during the day	0	0	0	2.5	0	3.5	1
O.T during the night	0	0	3	0	2	3	2

Calculate the total wage during the week, if you know that the average hourly wage is BHD 3.750.

Exercises 2-2-3:

Mohammed worked the following hours during the month of Ramadan from 13 April 2021 to 12 May 2021:

Week	FRI	SAT	SUN	MON	TUE	WED	THU
1	09 APR	10 APR	11 APR	12 APR	13 APR	14 APR	15 APR
	8	8	8	8	6	6	6
2	16 APR	17 APR	18 APR	19 APR	20 APR	21 APR	22 APR
	0	6	6	6	6	5	6
3	23 APR	24 APR	25 APR	26 APR	27 APR	28 APR	29 APR
	0	6	6	6	6	6	6
4	30 APR	01 MAY	02 MAY	03 MAY	04MAY	05 MAY	06 MAY
	0	5	6	6	6	6	6
5	07 MAY	08 MAY	09 MAY	10 MAY	11 MAY	12 MAY	13 MAY
	0	6	6	6	6	4	0

Calculate the wage for the month of Ramadan, if you know that the average hourly wage is BHD 4.200.

2.3 Payroll by Piece & Rate System

Piece-rate system; in which the employee is paid for each unit of output (piece) produced. Article No (38). of the Labor Law stipulates wages may be calculated by the hour, day, week, month, on a piece-rate or per production. Wages shall not be deemed to be calculated on a piece-work or production basis unless expressly specified in the labour contract.

Example 2-3-1:

▶ Khalid an employee at Gulf Plastic co. is given BHD0.750 as piece rate of work. Find his total pay for a September 2021, if his total production for that month was 360 pieces?

Solution:

Total wage pay = Number produced × Rate per piece

$$= 360 × BHD0.750$$

$$= BHD270.000$$

Exercises 2-3-1:

A- Fatima an employee at Manama co. is given BHD 0.750 as piece of work. If she produced 300 pieces. How much she received?

B- Ebrahim is an employee of the ABC Co. He is entitled to a monthly salary of BHD 400 addition to BHD0.250 each piece produced per month. If he produced 450 pieces in this month, how much is his total monthly salary?

C- Find his total pay for Sep 2021, if his total production for that month was 320 pieces and BHD0.800 a piece rate.

D- Fill in the missing value in the following table:

No	Employee	No-produced	Rate per piece	Total pay
1	Sami	900	???	BHD 405.000
2	Ahmed	???	0.850	BHD 382.500
3	Ziad	600	1.450	???

E- Mona an employee at Al-Jazeera Company, earned BHD300 in one month. If, in this month, she produced 360 pieces, what is the rate for each piece of work she's given?

Commission is the money that is paid as a reward for services which bears a simple percentage relationship to the value of business transacted.

Many sales agents are rewarded by a commission, sometimes like 5% of the value of the deal arranged. If salesman were paid a basic salary the employee would not be able to enjoy a very good standard of living. But with the commission they gain they will increase their salary. This will depend on the sales made. The following are the common types of commission that are used:

(1) Straight Commission. This means that the employees are paid a certain amount (as a percentage) of sales made or business transacted. Commissions act as an incentive to salesman that allow them to earn more money if they sell more.

(2) Graduated Commission. This means that the employees are paid a certain amount (or as a percentage or increasing steps) according to the grades or the steps that the organisation keeps.

(3) Volume Commission and Value Commission. This means that the employees are paid a certain amount on the number of sales items made or the range of the business transactions. The commission amount depends on the total value of the goods sold.

(4) **Bonuses.** This means that the employees are paid a certain basic salary, get a quota to be sold and if they sell it they will gain the bonus. The bonus is always been fixed as a percentage of the extra sales made.

Example 2-4-1:

► Nasser works as a salesman in a company for a base salary of BHD 300 per month plus a commission of 5% of sales. If he has made sales of BHD2000 at the end of the Mar 2021. What is the gross salary for this employee for the Mar 2021?

Solution:

Commission $= 5\% \times 2000 = $ BHD 100

Total gross wage $=$ Basic wage $+$ Commission

$\qquad\qquad\qquad = \quad$ 300 $\quad + \quad$ 100

$\qquad\qquad\qquad = $ BHD 400

Example 2-4-2:

► Ahmed, an employee, is paid a basic salary of BHD 300 per month, followed by a **graduated commission** of $2^{1/}{}_2\%$ on the first BHD1,000 of sales and 5% thereafter.

What will he earn in a month when sales total BHD4,700?

Solution:

Commission on the first BD1,000 $= 2^{1/}{}_2\% \times 1,000 = $ BHD 25

Balance $= 4,700 - 1,000 = $ BHD 3,700

Commission on the balance $= 5\% \times 3,700 = $ BHD185

Total gross wage $=$ Basic wage $+$ Commission

$\qquad\qquad\qquad = 300 + 25 + 185 = $ BHD 510.

Example 2-4-3:

► Rashid works as a sales employee with a monthly salary of BHD300 per month in addition **bonus** to 5% of annual sales, which are over BHD30000. If its annual sales reach 45000. Find his annual salary.

Solution:

Annual bonus = (45000 – 30000) × 5% = BHD 750

Annual salary = 300 × 12 = BHD3600

Total annual salary = 3600 + 750 = BHD4350

Exercises 2-4-1:

A. Salman should be refianed a basic salary of BHD250, and a commission of 5% of goods sold, if the total sales for BHD722. What was his total income this month?

B. Waleed works as salesman with 5% of sales and it increases to 7% if he sells more than BHD25,000 - what is his total commission if the sales BHD 48000?

C. Lyla work with basic salary monthly BHD 500 and commission takes 2% of the first BHD 20,000 of sales arranged, and 1% thereafter. If she sells BHD175,580 of goods in total, what is the gross salary for this month?

Exercises 2-4-2:

Find the missing value in the following table:

No	Employee	Salary BHD	Total Sales BHD	Commission		Total Salary
				Rate	BHD	
1	Khalid	400	3000	5%	???	BHD ???
2	Jamal	350	???	2%	100	BHD ???
3	Manal	300	4000	???	160	BHD ???

2.5 Deductions

Deductions:

▶ Deductions is the money that is deducted from the employee's salary for different purposes like pension funds, social insurance or the repayment of debts or loans.

The labour law for the private sector (decree 23/1976) in the Kingdom of Bahrain that is shown in article 74 in chapter ten that has been amended by Amiri Decree 14/1993. Shows that any employer shall not deduct more than 10% of the wage of a worker in repayment of debts or loans due to the employer nor shall any interest be charged on such debts or loans. There are wo types of deductions that can be incured:

(1) Statutory Deductions. This means that a certain deduction amount (as a percentage) has been taken from employee's income to the pension funds or social insurance. Payments made by the employee are according to a graduated scale, greater contributions being paid by higher wage or salary earners. The employer also making a contribution to that of the employee. The purpose of these payments is to provide a state pension to the employee on retirement. Zaka (زكاة) is also deducted as a percentage of the employees annual income .

(2) Non-statutory Deductions. These kind of deductions may be made from an employee's income and subject to the employee's agreement. These include payments to private employer-sponsored pension schemes, holiday funds, savings schemes, etc.

On a monthly draw basis and the following deductions are made:

(a) 6% Pension Fund Contribution Deduction (Basic Salary + Social Allowance) Public sector.

(b) 7% as social insurance. (Basic Salary + Fixed allowances) Private Sector.

(c) 1% Unemployment Insurance Deduction.

(d) Housing Bank Loan Repayment Deduction.

(e) Law Court Deduction.

Example 2-5-1:

► Moh'd works in a private sector in the Bahrain Co., with a basic monthly salary of BHD 400 and BD30 as a monthly qualification allowance. And BHD 20 as phone allowances this month only. Deducted per month BHD 50 law court. Calculate his net salary for the month?

Solution:

- Total allowances = qualification allowance + phone allowances

$$= \quad 30 \quad + \quad 20$$

$$= BHD\ 50$$

- Social Insurance = (basic salary + qualification allowance) × 7%

$$= (\quad 400 \quad + \quad 30 \quad) \times 7\%$$

$$= BHD\ 30.100$$

- Unemployment Insurance = (basic salary + qualification l allowance) × 1%

$$= (\quad 400 \quad + \quad 30 \quad) \times 1\%$$

$$= BHD\ 4.300$$

- Total deduction = Social insurance + Unemployment Insurance + Law Court Deduction

$$= \quad 30.1 \quad + \quad 4.300 \quad + \quad 50$$

$$= BHD84.400$$

- Net salary = Basic salary + Total allowancesJ - Total deduction

$$= \quad 400 \quad + \quad 50 \quad - \quad 84.400$$

$$= BHD365.600$$

Example 2-5-2:

► Ahmed Ali works in the Ministery of Education earning BHD1277 as basic salary, BHD70 as social allowance, BHD20 as transport allowance and BHD50 as living standard improving allowance.

Calculate his net salary for May 2021 if the housing bank loan is BHD 171.

KINGDOM OF BAHRAIN
Civil Service Bureau

STATEMENT OF EARNINGS AND LEAVES

PERSONEL INFORMATION

Ministry	EDUC-MINISTRY OF EDUCATION
CPR	XXXXXXXXX
Name	AHMED ALI AHMED
Position Title	SPECIALIST
Month	05-2021
Grade-Step	A7-Step 13
Bank-name	AHLI UNITED BANK
Acc.No.	0013XXXX-060

PAYMENT INFORMATION

Basic Salary	1,277.000

ALLOWANCES

Social Allowance	70.000
Transport Allowance	20.000
Living Standard Improving Allowance	50.000
GROSS PAY	1,417.000

DEDUCTIONS

Social Pension Deduction	4.200
Unemployment Insurance Deduction	13.470
Housing Bank Loan Repayment Deduction	171.000
Pension Fund Contribution Deduction	76.620
GROSS DEDUCTION	265.290
NET PAY	1,151.710

Solution:

- Total allowances = Social allowance + Transport allowance + living standard improving

$$= \quad 70 \quad + \quad 20 \quad + \quad 50 \quad = \text{BHD } 140$$

- Pension Fund Contribution = (basic salary + Social allowance) × 6%

$$= (\quad 1277 \quad + \quad 70 \quad) \times 6\% = \text{BHD } 80.820$$

- Unemployment Insurance = (basic salary + Social allowance) × 1%

$$= (\quad 1277 \quad + \quad 70 \quad) \times 1\% = \text{BHD}13.470$$

- Total deduction = Fund Contribution (Pension) + Insurance (Unemployment) + bank loan (Housing)

$$= \quad 80.820 \quad + \quad 13.470 \quad + \quad 171 \quad = \text{BHD}265.290$$

- Net salary = (1277 + 140) − 265.290 = BHD1151.710

Exercises 2-5-1:

A- Fawaz Moh'd, an accountant at an engineering company, earns BHD 450 per month and BHD 50 social allowance monthly and BHD 20 telephone allowance. Find how much he receives each month, if the housing bank loan BD 100.

B- Complete the following payroll blanks with the solution steps:

KINGDOM OF BAHRAIN

Civil Service Bureau

STATEMENT OF EARNINGS AND LEAVES

PERSONEL INFORMATION

Ministry	**Ministry of Health**
CPR	XXXXXXXXX
Name	**Yasser Salman Juma**
Position Title	**X-ray specialist**
Month	**Sep- 2021**
Grade-Step	**B8- 5**
Bank-name	**National Bank of Bahrain**
Acc.No.	**002969721563400**

PAYMENT INFORMATION

Basic Salary	**850.000**

ALLOWANCES	
Social Allowance	**50.000**
Living Standard Improving Allowance	**50.000**

GROSS PAY	**???**

DEDUCTIONS	
Social Pension Deduction	**???**
Unemployment Insurance Deduction	**???**
Pension Fund Contribution Deduction	**???**
GROSS DEDUCTION	**???**
NET PAY	**???**

C-   Majed works in the Moon Co. He receives monthly a basic salary BHD 525, BHD 40 phone allowances and deducted per month BHD 120 law court. What is his net salary?

Exercises 2-5-2:

A- Khalid Salem is an assistant manager at one of the government ministries. Calculate his net monthly salary if you know that he is due for the following month:

- Basic salary   BHD 1250
- Social allowance   BHD 70

- living standard improving allowance   BHD 50
- Travel allowance   BHD 120

B- Taha worked on the hourly system in the Kingdom Co. For BHD 3.000 per hour BHD 30 social allowance monthly and deducted BHD90 for the housing bank loan. If the working hours during the month of September 2022 are as follows:

- 46 hours of normal work.
- 10 hours of work during the day.
- 6 hours of work a night.
- 6 hours of work on Friday.

Calculate the net wage of September 2022

A payroll clerk computes the net wages an employee earns as well as gross wages. Gross wages are the total earnings of an employee. Net wages are what the employee takes wages after all deductions such as pension funds or social insurance and other payment. Naturally these deductions vary from time to time.

Gross wages require no calculation if the wage payable is fixed as a weekly or monthly sum of money. However, if payment is made on any other principle, for example on an hourly basis with varying rates of overtime pay, or on a basic-salary-plus-commission basis, then it will be necessary to work out each employee's earnings. This calculation involves looking at time clock records.

Figure (2-5-1): Calculating time using Time card document

The traditional way of recording hours of work for hourly-paid workers was by "clocking in and clocking out". A timing device was placed at the factory gate with clock cards arranged in racks on either side of the clock.

Many companies use computers for payroll. Following the procedure outlined below:

1- The payroll clerk completes a time records manual as in figure (2-5-2). Table collected for each employee from the record of each one when they used their magnet card whenever they came to work or left it.

Figure (2-5-2): Payroll Records

2- The information about each employee's time recod's transferred into the computer and formated.

3- Afterwards the computer will print out the payroll and the cheque of each employee.

For you as a beginner you may use the ready made spreadsheet that is available on your computer, as shown in figure (2-5-1) as an English record. This will allow you to have a nice time work record but you have to make sure that you fill in the customize time record that is shown in figure (2-5-3). The time summary for the full month or annualy you will get it after you finish from entering your information.

Others may prefer to use Microsoft Excel or Microsoft Access (as in figure 2-5-4) or the Microsoft Small Business. It depends on the purpose of the use and the lay out that you need.
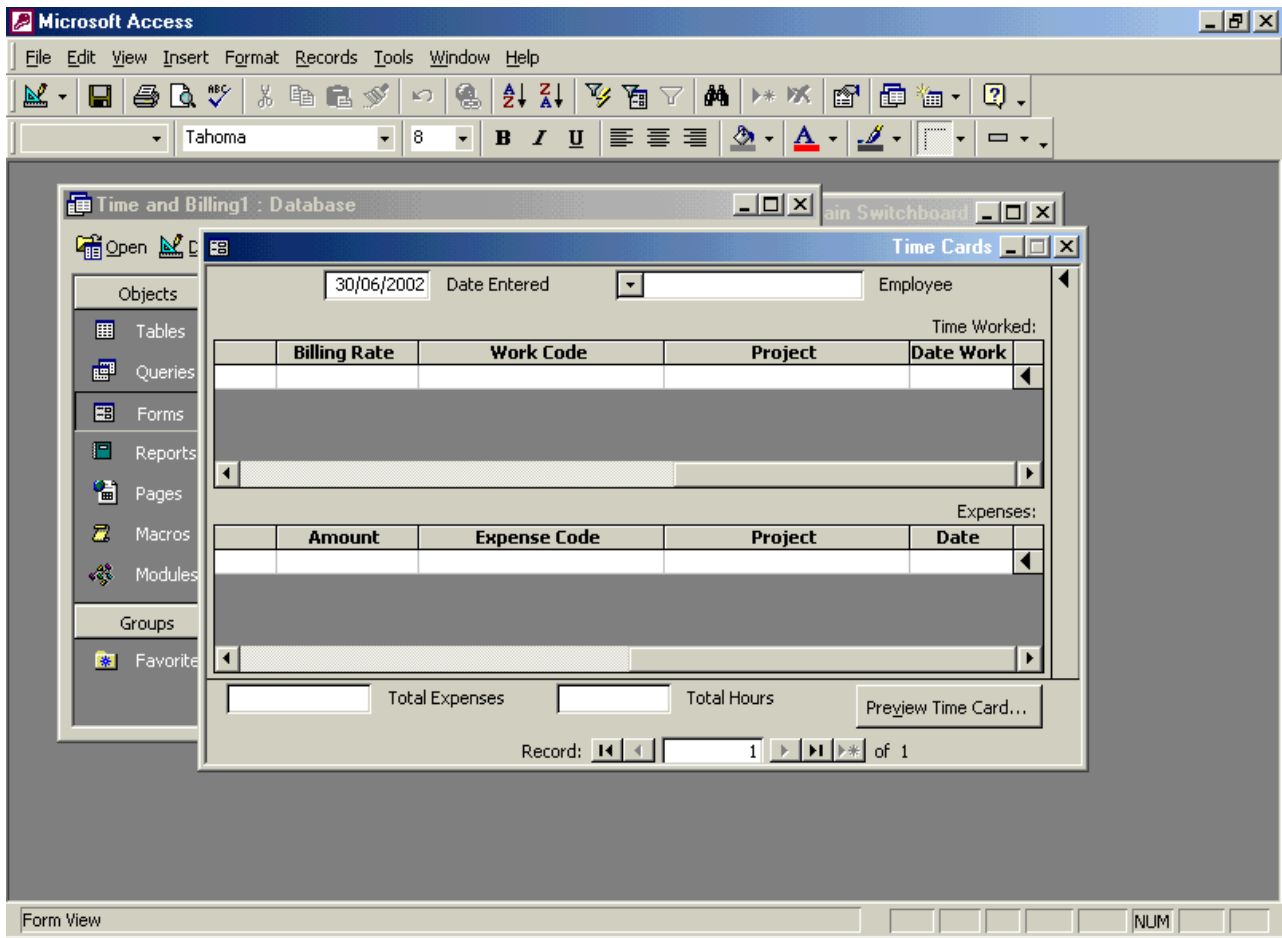
Weekly Timesheet

Week of:

Employee name:		Hourly pay:	
Title:		Supervisor:	

DAY	Start Time	Lunch Start	Lunch End	End Time	Vacation/ Sick leave	Regular Hours	Overtime hours	Total Hours Worked
Monday								
Tuesday								
Wednesday								
Thursday								
Friday								
Saturday								
Sunday								
WEEKLY TOTALS								
TOTAL PAY								

Employee signature:		Date:	
Supervisor signature:		Date:	

Figure (2-5-3): Customize Time Card document

Figure (3-5-4): Time Summary in Microsoft Access

General Questions

1Q: An employee is engaged for 46 hours during a week at a basic rate of BHD4.500. Calculate the wage received during the period?

2Q: Ahmed worked the following hours during the month of Ramadan from 13 April 2021 to 12 May 2021:

Week	FRI	SAT	SUN	MON	TUE	WED	THU
1	09 APR	10 APR	11 APR	12 APR	13 APR	14 APR	15 APR
	0	8	8	8	6	6	6
2	16 APR	17 APR	18 APR	19 APR	20 APR	21 APR	22 APR
	6	4	6	6	6	5	0
3	23 APR	24 APR	25 APR	26 APR	27 APR	28 APR	29 APR
	0	6	5	6	6	6	5
4	30 APR	01 MAY	02 MAY	03 MAY	04MAY	05 MAY	06 MAY
	6	0	6	6	6	6	6
5	07 MAY	08 MAY	09 MAY	10 MAY	11 MAY	12 MAY	13 MAY
	0	6	6	6	4	6	0

Calculate the wage for the month of Ramadan, if you know that the average hourly wage is BHD 3.500.

3Q: Find his total pay for Dec 2021, if his total production for that month was 415 pieces and BHD0.750 a piece rate.

4Q: Munira an employee at Sky Co. earned BHD 450 in one month. If, in this month, she produced 750 pieces, what is the rate for each piece of work she's given?

5Q: Fill in the missing value in the following table:

No	Employee	No-produced	Rate per piece	Total pay
1	Najm	1200	???	BHD 405.000
2	Najlaa	???	0.775	BHD 387.500
3	Amer	800	1.200	???

6Q: Aisha works as a salesperson a monthly salary of HBD 4500, with a commission of 1.5% on the first BHD3000 of merchandise sold, and 2% thereafter. If the total sales for the month BHD5500. What is her total salary?

7Q: Find the missing value in the following table:

No	Employee	Salary BHD	Total Sales BHD	Commission		Total Salary
				Rate	BHD	
1	Tariq	500	5000	1%	???	BHD ???
2	Majed	320	???	2%	200	BHD ???
3	Awatef	610	5000	???	150	BHD ???

8Q: Waleed works as salesman with 5% of sales and it increases to 7% if he sells more than BHD25,000 - what is his total commission if the sales BHD 48000?

9Q: Lyla work with basic salary monthly BHD 500 and commission takes 2% of the first BHD 20,000 of sales arranged, and 1% thereafter. If she sells BHD175,580 of goods in total, what is the gross salary for this month?

10Q: A clerk earns a gross salary of BHD3,600 p.a. (per annum) and receives an increase of 8% on 1st Jan 2021. What will be the amount of gross salary paid at the end of each month?

11Q: Alaa works in a private hospital. He receives monthly a basic salary BHD 450, BHD 50 social allowances and deducted per month BHD 100 loan installment from social insurance organization. What is her net salary?

12Q: Yahia is an assistant manager at one of the government ministries. Calculate his net monthly salary if you know that he is due for the following month:

- Basic salary   BHD 1850
- Social allowance   BHD 50
- living standard improving allowance   BHD 80

13Q: Mohamed Adel worked on the hourly system in the Alsalam Co. BHD 4.500 per hour BHD 50 social allowance monthly. If the working hours during the month of Dec 2021 are as follows:

- 47 hours of normal work.
- 8 hours of work during the day.
- 4 hours of work a night.
- 3 hours of work on Friday.

Calculate the net wage of Dec 2021.

14Q: Use the following link to answer the questions:

https://forms.office.com/Pages/ResponsePage.aspx?id=oeT_Cpw_90aTVwafLBO6BN_
Kho9-4ixNoHCKkWQCFIVUOFpTN09FMVJPTjBSV1lSVjJRVk5WTUNTQi4u

Unit 3

Discounts and Pricing Goods

Learning Objective

By the end of this unit, the student should be able to:

► calculating discounts, selling price and purchase price.

► calculating customs and tariffs.

► pricing goods.

► preparing the invoice.

3.1 Trade Discount

Introduction

A discount is a reduction in the value of goods and services made by wholesalers and retailers to increase sales, promote a product or dispose of inventory before it is obsolete. Usually, the merchant announces the discounts on certain occasions, such as the end of the calendar year or holidays and seasons.

The discount has different ways and forms according to the type of goods, the customer and the merchant.
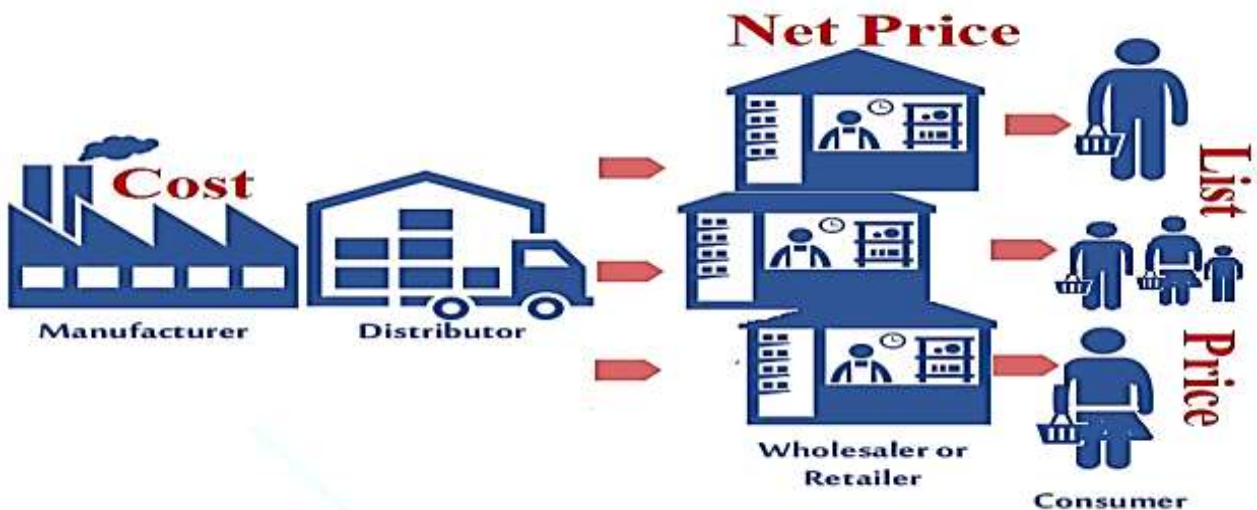
Trade Discount

A discount is an amount deducted from the list price. Manufactures and distributors give retailers trade discount as incentives for a sale and cash discount as incentives for paying promptly. Discount are usually established by discount rates. Given is percent of decimal form, based on the money owed. The discount, then, is a percentage of the list price.

Most products go from the manufacturer to the consumer by way of the wholesale merchant (wholesaler of distributor) and the retail merchant (retailer).

Manufactures or wholesaler prepare a catalog of items it has to sale, it usually give each item a list price, also called a catalog price (3-1-1).

Figure (3-1-1): Supply Chain

Trade discount is the amount by which the manufacturer or dealers reduce the price of a product from the selling price as an amount or a percentage of the selling price, trade discount is a routine reduction from the regular fixed price of a product. The use of trade discounts allows the company to encourage customers to buy, stimulate sales, or dispose of inventory.

The deduction in a business transaction is a waiver of a certain amount of money in the form of a percentage or other, and may have a financial impact on accounting records such as cash discount or quantity deduction or does not have a financial effect such as a trade discount.

Important Points 3-1-1:

▶ Trade Discount = List Price × Discount Rate

▶ Discount Rate $= \dfrac{\text{Trade Discount}}{\text{List Price}} \times 100$

▶ List Price $= \dfrac{\text{Net Price}}{\text{Complement of Trade Discount Rate}}$

Example 3-1-1:

► The list price of a laptop is BHD520. ABC Computer Co, gives a 30% discount to all retailers. What is the amount of trade discount and payment (net price)?

30% Discount

Solution:

- Trade Discount = List Price × Discount Rate

$$= \quad 520 \quad × \quad 30\%$$

$$= \quad BHD156$$
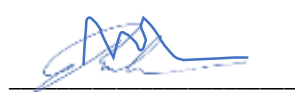
- Net Price (Payment) = List price – Trade Discount

$$= 520 – 156$$

$$= BHD364$$

> Or   100% - 30% = 70%
>
> = 520 × 70% = BHD 364

ABC Computer Co.

Telephone: 173333xx
Fax: 173333xx – PO Box 112x
Manama – Kingdom of Bahrain

INVOICE

Date: 04/09/2022

Invoice No.: 05241

https://www.instagram.com/xxxxx_bh/

To: Salman Hamad Moh'd

No.	Items Details	Quantity	Unit Price BHD	Unit Price Fils	Total Price BHD	Total Price Fils
1	Laptop	1	520	000	520	000

_____
Signature

Total Price	**520.000**
Discount 30%	**156.000**
Net Price	**364.000**

Example 3-1-2:

► Retailer's net price is BHD160 for Air-Conditioning with a list price of BHD200. What is the discount rate?

Solution:

- Trade Discount = List Price - Net Price

$$= 200 \quad - \quad 160$$

$$= BHD\ 40$$

- $\text{Discount Rate} = \dfrac{\textbf{Trade Discount}}{\textbf{List Price}} \times 100$

- $\text{Discount Rate} = \dfrac{40}{200} \times 100 \quad = 20\%$

20%
BHD40 Discount

80% **BHD160**
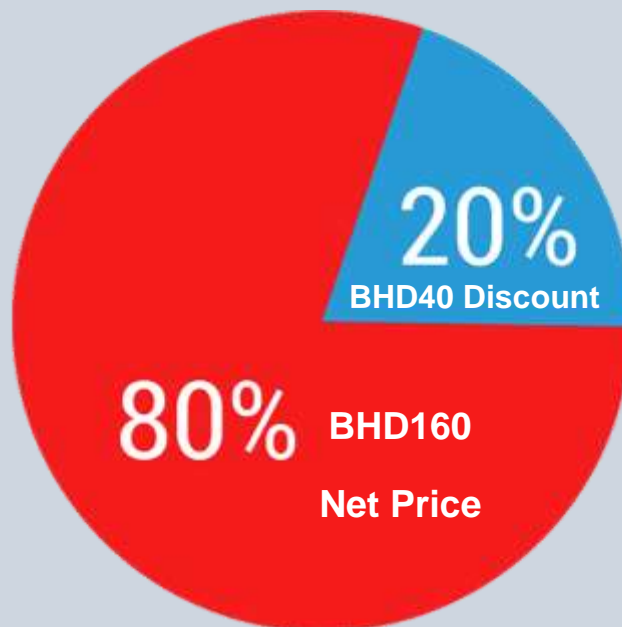
Net Price

Example 3-1-3:

► A car workshop made a special offer through instagram to buy three tires (while) and the fourth is for

Free If the value of each one is

BHD20. what is the net price and

discount rate?

Solution:

- Net Price = List Price - Trade Discount

  = 80   –   20   = BHD60

- Discount Rate $= \dfrac{\textbf{\textit{Trade Discount}}}{\textbf{\textit{List Price}}} \times 100$

  Discount Rate $= \dfrac{20}{80} \times 100 \quad = 25\%$

Telephone: 178888xx
Fax: 178888xx– PO Box 44x
Manama – Kingdom of Bahrain

INVOICE

Invoice No.: 457869

Date: 09 Nov 2021   https://www.instagram.com/xxxxx_bh/

To: Jamal Amar Ali

S. No. Items	Items Details	Quantity	Unit Price		Total Price	
			BHD	Fils	BHD	Fils
1	Wheels	4	20	000	80	000

Total Price	80.000
Discount 25%	20.000
Net Price	60.000

Signature

69

Exercises 3-1-1:

1. The list price of a window type air-conditioner is BHD180, the net price BHD151. What is the trade discount?

2. The list price of a motor bike is BHD3000. A manufacturer gives a 20% discount to all retailers. What is the trade discount and net price (payment)?

3. The list price of a sewing machine is BHD122.990. A manufacturer gives a 30% discount to all retailers. What is the trade discount?

4. The list price of a washing machine is BHD275 the net price BHD225. What is the discount rate?

5. A Manufacturer's net price is BHD58.950 for a fan with a list price of BHD72.990. What is the discount rate to the nearest percentage?

6. Complete the invoice if you know the following: A publisher's net price is BHD13.200 for a book with a list price of BHD16.500.

Telephone: 179898xx
Fax: 179898xx – PO Box 15xx
Manama – Kingdom of Bahrain

XYZ Publishing

INVOICE

Date: 15 Oct 2021   Invoice No.: A1547

To: Ahmed Fahad Abdulla

S. No. Items	Items Details	Quantity	Unit Price		Total Price	
			BHD	Fils	BHD	Fils
1	Books	10	1	650		

_____
Signature

Total Price	
Discount ………..	
Net Price	

Example 3-1-4:

► The Bahrain Company promoted the price of a baby milk carton at BHD10.000 with trade discount based on the following buyer's order volume or quantities:

Trade Discount	Quantity
0%	1-10
5%	11-50
10%	51-100
20%	Over 100

If a customer buys 70 boxes, how much will he pay to Bahrain Company?

Solution:

- Trade Discount $= 10 \times 10 \times 0\%$ $= BHD\ 0.000$

  $= 40 \times 10 \times 5\%$ $= BHD\ 20.000$

  $= 20 \times 10 \times 10\%$ $= BHD\ 20.000$

  Total discount $= BHD\ 40.000$

- Net Price $= (70 \times 10) - 40 = BD\ 660.00$

Example 3-1-5:

► IKEA gave a discount card (IKEA Family Members) to the customer at a rate 10%. If the customer paid BHD 225. What is the list price of the item?

Solution:

- List price $= \dfrac{225}{(100\% - 10\%)} = BHD250$

Reading 3-1-1:

Discount Cards

Nowadays it is more common to get a card that allows you to get 5% to 15% discount as a promotion to buy more from one shop. Centre point group provides Shukran card that allow customers to get a discounts depending on the number of points accumulated over a period of time.

Exercises 3-1-2:

1- A manufacturer gives 25% discount to the first hundred refrigerators and 30% over hundred to all retailers. If the price of each one is BHD 200. Calculate the trade discount and net price for the following:

   a- Al Dana Electronics bought 80 refrigerators.

   b- Carrefour stores bought 150 refrigerators.

2- Manama Co. promoted the price of oil carton at BHD12.000 with trade discount 10% to 100 cartons and 12% for more than 100 cartons. Find the net price if the customer bought 170 cartons.

3- Al Jazeera Supermarket customers enjoy collecting points of sale to obtain a commercial discount at a rate of 5% for every thousand points. If a customer purchases BHD 165.425 and has 1000 points - How much will he pay to cashier?

3.2 Cash Discount

Manufacturers and wholesalers always give a discount for early payment. This kind of discount is called cash discount. You should know that the cash discount is subtracted after trade discount but before transportation charges are added. You should also know the common language that use for the cash discount before starting the examples. The following table lists the meaning of some trade terms which might appear on the invoices.

Meaning of Some Trade Terms That Might Appear on the Invoices

Terms	Meaning
3/10	3% discount if payment made within 10 days of invoice date.
1/30	1% discount if payment made within 30 days of invoice date.
2/10, E.O.M.	2% discount within 10 days of beginning of next month (E.O.M. means **E**nd **O**f **M**onth).
n/30	Net within 30 days of invoice date.
3/10,n/30, R.O.G.	3% within 10 days of **R**eceipt **O**f **G**oods (R.O.G.), net from 11th to 30th day.

Tips 3-2-1:

► Freight is the transportation of goods by any means of transportation (like aircraft, ship, and wagon).

Example 3-2-1:

► Adam received an invoice dated 04th July 2022 from **Phone store**. that shows a net price of BHD 450 with the terms 2/10, n/30.

a) Find the latest date the cash discount is allowed.

b) How much will he pay on 12 July 2022?

c) How much will he pay assuming on 16 July 2022?

Telephone: 171212xx
Fax: 171212xx – PO Box 78x
Muharraq – Kingdom of Bahrain
https://www.instagram.com/xxxxx_bh/

INVOICE

Date: **04-07-2022**   Invoice No.: 00541

To: Adam Eid Jassim   Term: **2/10, n/30**

S. No. Items	Items Details	Quantity	Unit Price BHD	Unit Price Fils	Total Price BHD	Total Price Fils
1	Phone	4	125	000	500	000

Total Price	500.000
Discount 10%	50.000
Net Price	450.000

Signature

Solution:

a) The <u>cash</u> discount is allowed up to and including 10 days from the invoice date 04th July 2022.

b) **On 12 July 2022:**

Cash Discount = Net Price × Cash Discount

= 450 × 2% = BHD 9

Net amount = Net Price – Cash Discount

= 450 - 9 = BHD 441

c) **On 16 July 2022:** Pay the net price of invoice BHD450 without cash discount.

Example 3-2-2:

► The goods listed on the ABB Tools Store invoice shown were received on 26th March 2022 and the bill was paid on 2nd April 2022. How much was the amount paid?

No. M44452

ABB TOOLS STORE
Tel: 173311xx – PO Box 874x
Isa Town – Kingdom of Bahrain

Date: 26-03-2022

Terms: 4/10, n/30, R.O.G.
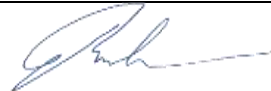
INVOICE

Name: Ali Ahmed Maher   https://www.instagram.com/xxxxx_bh

S. No. Items	Items Details	Quantity	Unit Price		Total Price	
			BHD	Fils	BHD	Fils
1	Leverage Cutters	40	18	950	758	000
2	Expansive Bit	50	6	950	347	500
				Subtotal	1,105	500
				Less Trade Discount	409	040
				Balance	696	460
				Freight	29	850
				Total BD	**726**	**310**

CASH	US$	OTHERS	AMEX	VISA	MASTER	DINARS

Signature: _____

Solution:

The 4% discount applies since payment was made within 10 days of receipt of goods.

Cash Discount = (Net price – Freight) × Cash discount

$$= (726.310 - 29.850) \times 4\% = \text{BHD } 27.860$$

Total Paid = Net Price – Cash Discount

$$= 726.310 - 27.860 = \text{BHD} 698.450$$

Exercises 3-2-1:

▶ Find the amount paid for each of the following invoices:

1. Date received: January 24, 2022; date paid: February 2, 2022.

Balance	987	000
Freight	36	000
Total BHD	**1,023**	**000**
Date:	05-01-2022	
Terms:	3/10, 1/30, n/60	

2. Date received: September 5, 2022; date paid: October 7, 2022.

Balance	5,682	000
Freight	318	000
Total BHD	**6,000**	**000**
Date:	02-09-2022	
Terms:	3/10, E. O. M.	

3. Date received: May 8, 2022; date paid: May 16, 2022.

Subtotal	2,587	970
Less 7% and 10%		
Balance		
Freight	341	860
Total BHD		
Date:	04-05-2022	
Terms:	4/10, n/30, R.O.G.	

4. Date received: June 7, 2022; date paid: July 1, 2022.

Subtotal	3,119	990
Less 7% and 10%		
Balance		
Freight	45	650
Total BHD		
Date:	07-06-2022	
Terms:	8/10, n/30, R.O.G.	

3.3 Value Added Tax (VAT)

VAT is imposed on the import and supply of Goods and Services at each stage of production and distribution, including "Deemed Supplies".

> ✎ **VAT:**
> ► VAT is an indirect tax on consumer spending. It is collected on supplies of goods and services as well as on imports of goods and services into Bahrain.

Bahrain introduced VAT on 1 January 2022. The standard rate will be 10%. Certain goods and services will be subject to a zero-rate (0%) of VAT and others will be exempt from VAT.

VAT Treatments and Policies

Different types of VAT treatments and policies are applied depending on the nature of the good or service.

- ► **Standard rated items: 10**% VAT will be applied on these goods and services.
- ► **Zero-rated items:** Supplies are subject to VAT, but the VAT rate charged is 0%, associated Input VAT may be deducted.
- ► **Exempt items:** Supplies on which no VAT is charged and for which associated Input VAT may not be deducted.
- ► **Out of scope items:** Supplies which are kept out of the ambit of VAT.

The following sectoins presnt VAT treatment and policies relating to goods and service in Kingdom of Bahrain:

Rate	Type	Supply
Zero-Rate	Basic needs	Basic food items
	Education	Private deucation services
	Health	Private preventative and basic healthcare services
		Specific medicine and medical equipment
	Oil and Gas	Domestic Oil and Gas
	Transport	Domestic transportation
		Inernational transportation
	Real Estate	Constructon services of new buildings
	Commodities	Precious stones
		Investment gold, silver, and platimum
	International Trade	Export of goods
		Export of sevices
Exempt	Real Estate	Sales and rental residential and commercial Real Estate
	Financial Services	Financial services (e.g.interest income generated by the grandting of a loan and the sale of shared)

Note:Please refer to Aticle (1) and (53) of the VAT law for futher details.

Internet Searching 3-3-1:

► For general information on VAT, please refer to the VAT General Guide issued by the NBR which can be found on the NBR's website, www.nbr.gov.bh, or scan the QR code

Below are examples of items that fall within the above treatments, and for more information visit the link : http://ww.mbr.gov.bh/itmes_subect_ to Vat   or scan the QR code.

Item	Zero-rated (0%)	Standard rated (10%)
Food	Food items listed in the GCC	Restaurants and coffee shops
Education	Educational services provided by kindergartens	Professional education
Healthcare	General medical health services	Cosmetic procedure
Financial Services	Interest payments on loans	General insurance, Fees paid on remittances
Oil and Gas	Oil and Gas	
Construction of new buildings	Construction services	Construction works to an existing building
Real Estate	Exempt	Hotel accommodation, Rental of function room and halls
Transportation Services	Local transport of goods and passengers	Vehicle purchases, Vehicle rental without a driver
Telecommunication Services		Fixed phone services (i.e. landlines) -Home internet
Import and Export	Export of services	Services provided in Kingdom of Bahrain by a foreign company.

How is the value added tax VAT applied?

VAT is imposed at each phase of the supply chain, from the production to the final sale of the good or service, as illustrated in figure (3-3-1):
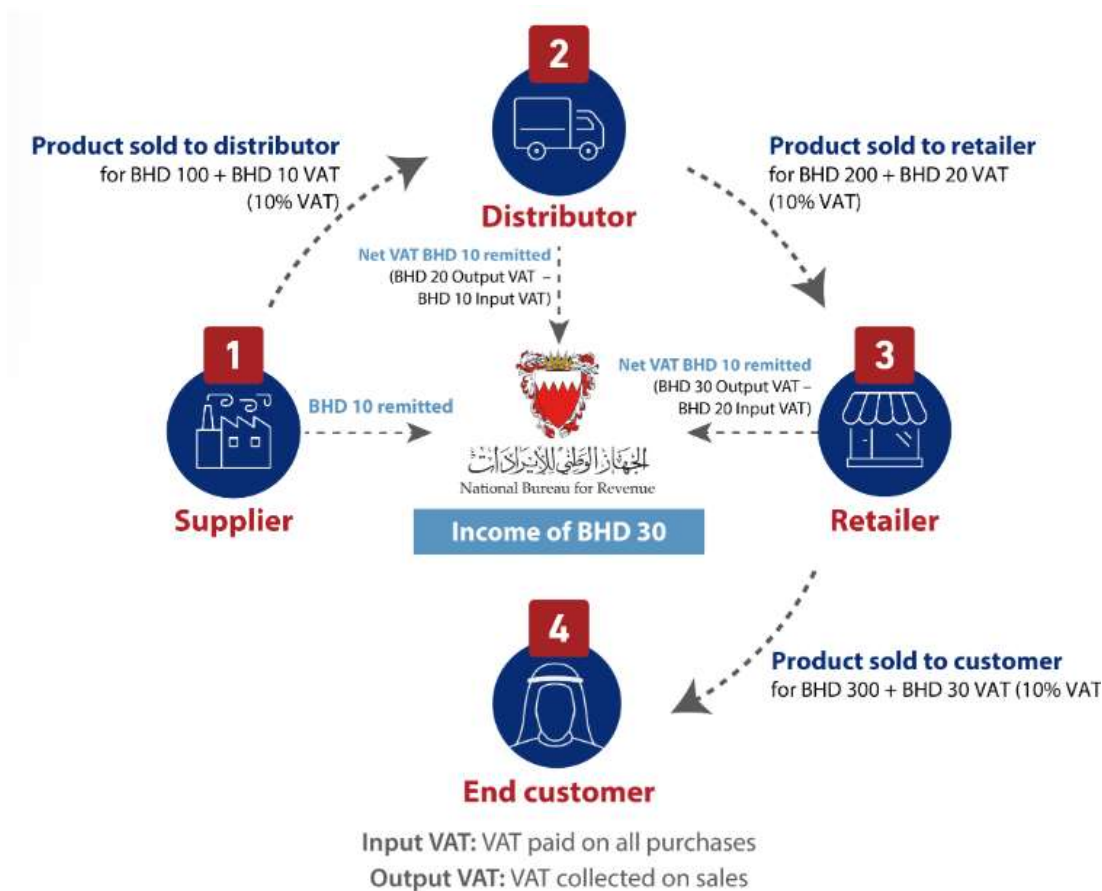
Figure (3-3-1): Applying of Value Added Tax

When purchasing selected goods or services, consumers pay the VAT cost. In turn, businesses pay the National Bureau for Revenue (NBR) the VAT collected from their customers' purchases and recovers the VAT they paid to their suppliers.

Excise Goods

On November 2016, the States of the Gulf Cooperation Council (GCC) have agreed to implement Excise on specific harmful goods to encourage reducing the consumption of these goods.

The Kingdom of Bahrain is committed to regional and international agreements, such as the Common Excise Tax Agreement of the States of the GCC, to control the consumption of excise goods.

Excise is imposed on products that are harmful to human health and to the environment. The introduction of Excise is an initiative intended towards the consumption of healthier alternatives and being away from the consumption of harmful products.
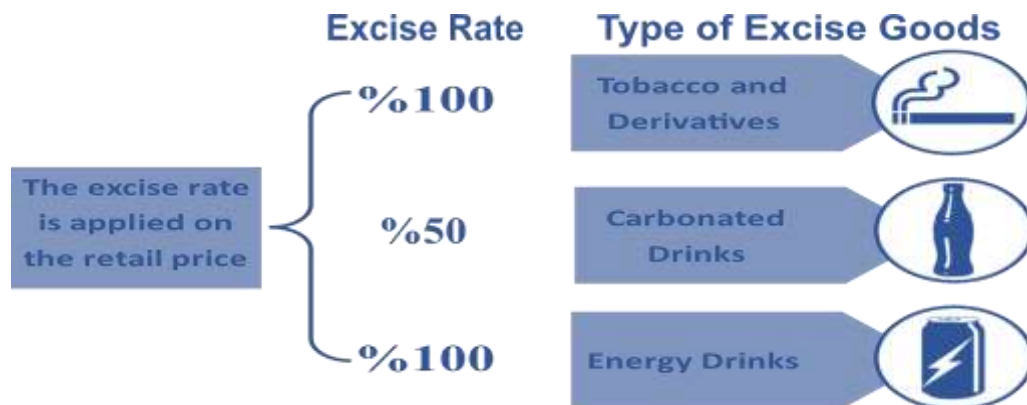
Figure (3-3-2): Type of Excise Goods

Example 3-3-1:

► Fahad bought the following from supermarket. Calculate the value added tax and Excise Goods for the following purchases:

	Milk 1 liter	BHD 0.450
	Tv 21" inch	BHD 50.000
	Energy Drinks	BHD 1.250

Solution:

- VAT Milk 1 liter   = 0.450   ×   0% = BHD 0.000
- VAT Tv 21"   = 50.000   × 10% = BHD5.000
- Excise Goods Energy Drinks = 1.250   × 100% = BHD 1.250
- Total VAT & Excise Goods   = BHD 6.250
- Total Pay   =   (0.450 + 50.000 + 1.250) + 6.250 = BHD57.950

3.4 Tariff in the Kingdom of Bahrain

Customs Tariff in the Kingdom of Bahrain follow the code, which is issued by the World Customs Organization (WCO). It works out the percentage system for all commodities (except for Tobacco and all other tobacco related products, where the customs duty is per a ceiling which is a minimum of 100% of the value or evaluated based on the quantity or weight, to be taken according to the higher value as shown in table (3-4-1).

The Bahrain Customs Tariff rates are divided into four groups: Free duty, 5%, 100% and 125%. The following table gives examples of common goods in each of the four groups. Table **(3-4-1)** include the Bahrain customs example which you can refer to in the search engines for more information.

Duty %	Example of common goods
Free Duty Exempt	Fresh vegetable and fruits, fresh or frozen fish, diary, meat, all other alive animals that are used for human consumption, books, magazines, catalogues, and all other printed papers for advertising. Includes <u>428</u> listed commodities, mostly food and medical products
10%	All imported items like clothes, perfumes, cars, electronics like television, videos, and calculator.
100%	Tobacco and Tobacco related products.
125%	Alcoholic beverages.

Table (3-4-1): Custom Tariff Percentage Amount in the Kingdom of Bahrain

Example 3-4-1:

► Al-Adliya Furniture imported furniture at cost of BHD12,600. Calculate customs paid on the furniture according to the tariff rate in the Kingdom of Bahrain.

Solution:

$$\text{Customs} = 10\% \times 12{,}600$$
$$= \text{BHD}1260$$

Example 3-4-2:

► Carrefour Stores imported the following items last month:

- Quantity of fresh vegetables and fruits amounting to BHD1,780.
- Electronic items amounting to BHD23,420.
- Cigarettes and tobacco amounting to BHD 1,910.400.

Calculate how much customs Carrefour Stores paid at customs for all these items.

Solution:

- Fresh vegetable and fruits Duty Free (Duty Exempt)
- Customs on electronica items = Amount paid × Rate of Customs

$$= 23{,}420 \qquad \times 10\% \qquad = \text{BHD}2{,}342.$$

- Customs on cigarettes and tobacco   = 1,910.400 × 100% = BHD1,910.400
- Total Customs = 2,342+ 1,910.400   = BHD4,252.400

Exercises 3-4-1:

1. Find value added tax for the following:

   - BHD 6.500   Gasoline for vehicles

   - BHD 12.850   School uniforms

   - BHD 8000   A new extension to an existing building

   - BHD 188   Mobile phone services

   - BHD 161.250   Interest payments on loans

2. Jassim bought a new car model 2021 for BHD5300 with trade discount 10%. Also, paid the annual insurance premium BHD220. Find the following:

   - a- Total VAT.
   - b- Total Payment.

3. A man bought BHD 15.600 of cigarettes – find the VAT and total payment.

4. Find the unknown factors in the following table:

Item	List Price	Trade Discount	Net Price	VAT	Amount Payment
Home Internet	BHD 18.000	???%	BHD14.400	BHD…	BHD……
Motor Oil	BHD……	10%	BHD…….	BHD…	BHD18.000
Fees of Cheque Books	BHD 10.000	XXX	BHD…….	BHD…	BHD…….
Car Spare Parts	BHD ……	5%	BHD…….	BHD…	BHD199.500

Exercises 3-4-2:

► Complete the following invoice:

GUlf Co
NO: 04511

TRN:220045212133401

Vat Invoice

gulfbah21@hotmail.com   gulf.co2021

Name:...Osama Ahmed.......... CPR:8500216412   Te:...3924510**...
Date: ....12 Sep 2021...

Qty	Item	Unit Price	Total
1	Mobile Phone	200.000	....
2	Wireless Headphones	50.000	....

Total BHD

Trade Discount 10%   ....

Net Price   ....

Vat   10%   ....

Payment amount

3.5 Pricing Goods Based on Cost Price

We are all consumers demanding supplies of foods, clothing and other manufactured goods. Costs and prices of these goods are consequently of enormous interest to everyone.

You know now that the producers' or merchandisers' costs are the expenses of production such as raw material, utilities like electricity and water charges, telephone charges, salary and wages, etc. For wholesalers the cost prices are the prices paid to the producers or merchandisers for their products. Also, the overhead expenses, such as warehousing costs, transport costs, insurance premiums, etc.

Both of them, the merchandisers and the wholesalers, operate by adding on a mark-up to their cost prices to achieve their selling prices. This mark-up has to be substantial, because they have to cover all the overhead expenses and leave a margin of profit for the retailer as a reward for the effort involved.

Mark-ups are always calculated as percentages, and are based on the cost price.

Mark-up:
▶ The difference between the selling price and the cost of any goods is called the mark-up.

Important Points 3-5-1:

- Amount of Mark-up based on cost $=$ Selling price $-$ Cost

- Percentage of Mark-up $= \dfrac{\textbf{Selling Price} - \textbf{Cost}}{\textbf{Cost}} \times 100$

Example 3-5-1:

► A retailer's cost for a digital camera was BHD210.500. The camera was sold for BHD250.500. What was the mark-up amount and percentage based on cost?

Solution:

- Amount of Mark-up based on cost = Selling price – Cost

$$= 250.500 \quad - \quad 210.500$$
$$= BHD40$$

- Percentage of Mark- up $= \dfrac{Selling\ Price - Cost}{Cost} \times 100$

$$= \dfrac{250.500 - 210.500}{210.500} \times 100 = 19\%$$

Example 3-5-2:

► A retailer pays BHD345.970 for a computer and BHD4.740 in transportation charges. If retailer sell a computer for BHD 403.710. What is the retailer's cost and mark-up percentage based on cost?

Solution:

- Retailer's cost =   Cost   + Transportation charges

$$= 345.970 + \quad 4.740$$
$$= \quad BHD350.710.$$

- Percentage of Mark- up $= \dfrac{Selling\ Price - Cost}{Cost} \times 100$

$$= \dfrac{403.710 - 350.710}{350.710} \times 100 = 15.11\%$$

Exercises 3-5-1:

1. A retailer pays BHD157.320 for a stereo receiver and BHD2.050 in transportation charges. What is the retailer's cost?

2. A retailer pays BHD47.250 for a mattress and BHD1.220 in transportation charges. What is the retailer's cost?

3. A retailer's cost for an electric oven is BHD229. The oven sold for BHD168.880. What was the mark-up?

4. A retailer sells a washing machine that costs BHD140.980 for BHD201.950. What is the percentage of mark-up based on cost ?

Example 3-5-3:

► A retailer's cost for a Microwave Oven is BHD240. The retailer wants an 65% mark-up based on cost. What is the selling price?

Solution (1):

1) Find the mark-up based on cost:

Mark-up based on cost = Mark-up percentage × Cost

$$= 65\% \times 240 = BHD156$$

2) Find the selling price:

Selling price = Cost + Mark-up based on cost

$$= 240 + 156 = BHD396$$

Solution (2):

1) Selling percentage = Mark-up percentage + Cost percentage

$$= 65\% + 100\%$$

$$= 165\%$$

Margin Up		Cost		Selling Price
65	+	100	=	165
?		BHD 240	=	?

2) Selling price $= \dfrac{240 \times 165}{100} = BHD396$

Exercises 3-5-2:

1- A retailer's cost for a basketball is BHD15. The retailer wants an 80% mark-up based on cost. What is the selling price?

2- A retailer knows that consumers will pay at most BHD21.000 for a dress and wants a 40% mark-up based on cost. What is the maximum cost that the retailer pays for the dress?

3- A retailer's cost for a fan was BHD12.880. It sold for BHD24.950. What was the mark-up?

4- A retailer pays BHD39.090 for a vacuum cleaner and BHD2.100 in transportation charges. What is the retailer's cost?

5- A retailer knows that consumers will pay at most BHD24.000 for a suit and wants a 40% mark-up based on cost. What is the maximum cost that the retailer pays for the suit?

6- Complete the following table:

Item	Basic Cost for Retailer BHD	Transportation Cost BHD	Retailer's Cost BHD	Selling Price BHD	Mark-up based on cost
Iron	12.990	?	14.040	20.980	?
T.V	?	1.570	16.800	?	96%
Oven	135.600	1.140	?	25.250	?
Stand Mixer	?	1.140	?	28.950	73%

3.6 Pricing Goods Based on Selling Price

You know that sometimes mark-up is stated as a percentage of the cost while others can be stated as a percentage of the selling price. To find it you should divide the **mark-up amount by the selling price** and convert to a percentage. In this case we **call the mark-up as a margin of profit.** The formula is:

> **Important Points 3-6-1:**
>
> ► Amount of Margin of Profit = Selling Price – Cost
>
> ► Percentage of Margin of Profit $= \dfrac{\textbf{Selling Price} - \textbf{Cost}}{\textbf{Selling Price}} \times 100$

> **Example 3-6-1:**
>
> ► A retailer sells a television that costs BHD525.750 for BHD679.950. What is the percentage of mark-up based on the selling price or margin of profit (to the nearest percentage)?
>
> **Solution:**
>
> - Amount of Margin of Profit = Selling Price - Cost
>
> $= 679.950 - 525.750$
>
> $= BHD154.200.$
>
> - Percentage of Margin of Profit $= \dfrac{\textbf{Selling Price} - \textbf{Cost}}{\textbf{Selling Price}} \times 100$
>
> $= \dfrac{679.950 - 525.750}{679.950} \times 100 = 22.68\%$

Example 3-6-2:

► The percentage of margin of profit of a refrigerator was 25%. The selling price was BHD579. What was the amount of the margin of profit and cost?

579 BHD

Solution (1):

Margin of profit amount = Margin of profit percentage × Selling price

$$= 25\% \times 579$$

$$= BHD144.750.$$

Cost = Selling price - Margin of profit amount

$$= 579 - 144.750$$

$$= BHD434.25$$

Solution (2):

- Find the Selling percentage based on margin of profit and cost percentage:

Cost percentage = Cost - Margin of profit percentage

$$= 100\% - 25\% = 75\%$$

This means:

- Margin of profit $= \dfrac{25 \times 579}{100}$

Margin of profit	Selling Price	Cost
25	100	75
?	BHD 579	?

$$= BHD144.750$$

- Cost = Selling price - Margin of profit amount

$$= 579 - 144.750 = BHD434.250$$

or

- Cost $= \dfrac{75 \times 579}{100} = BHD434.250$

90

Example 3-6-2:

▶ A retailer knows that consumers will pay at most BHD21.000 for a men's suit and wants a 30% margin of profit. What is the maximum cost that the retailer may pay for the dress?

Solution (1):

1) Find the mark-up:

Margin of profit $= 30\% \times$ Selling price

$= 30\% \times$ 21

$=$ BHD 6.300

2) To find the maximum cost you can subtract the margin of profit amount from the selling price:

Maximum cost $=$ Selling price - Margin of profit

$=$ 21.000 $-$ 6.300

$=$ BHD14.700

Solution (2):

Maximum cost $=$ Selling Price $\times$ (100% $-$ Margin of Profit %)

$=$ 21.000 $\times$ (100 % $-$ 30 %)

$=$ 21.000 $\times$ 70%

$=$ BHD14.700

Exercises 3-6-1:

a) A retailer knows that consumers will pay at most BHD15.300 for a shirt and wants a 30% margin of profit. What is the maximum cost that the retailer may pay for the shirt?

b) The percentage of margin of profit of a radio was 40%. The selling price was BHD22.500. What was the percentage based on the selling price or margin of profit (mark-up)?

c) A retailer knows that consumers will pay at most BHD116.200 for a telescope and wants a 25% margin of profit price. What is the maximum cost that the retailer may pay for the telescope?

d) A retailer's cost for a jacket is BD35.900. The retailer wants a 35% margin of profit based on the selling price. What is the selling price?

e) A retailer sells a washing machine that costs BD140.980 for BD201.950. What is the percentage of mark-up based on the selling price or margin of profit (to the nearest percentage)?

f) The percentage of mark-up based on the selling price of a stereo was 65%. The selling price was BD256.950. What was the margin of profit?

g) A retailer sold a rocking chair that cost BD98.000 for BD159.000. What was the percentage of margin of profit based on the selling price?

3.7 Mark-Down

Sometimes a retailer marks down the prices of the goods on display with a view to clearing them from the shelves. The reasons for this are some goods, like new fashions, fade very quickly, while other goods have a 'sell-by' date on them which means that they must not be sold beyond that date. To clear such goods, sales are held and individual price tickets are marked down, or general sales are alone such as "all goods reduced by 33% on marked prices".

Important Points 3-6-1:

► Mark-Down = Regular Price – Sale Price

► Percentage Amount of Mark-Down $= \dfrac{\text{Regular Price } - \text{ Sale Price}}{\text{Regular Price}} \times 100$

► Mark-Down= Regular Price x Percentage Amount of Mark-Down

Example 3-7-1:

► A casting reel regularly priced at BHD36.290 is on sale for BHD29.950. What is the Mark-down?

Solution (1):

Mark-Down = Regular Price – Sale Price

$= \quad 36.290 \quad - \quad 29.950 \quad = \text{BHD6.340}$

Solution (2):

Percentage Amount of Mark-Down $= \dfrac{\text{Regular Price } - \text{ Sale Price}}{\text{Regular Price}} \times 100$

$= \dfrac{36.290 \ - 29.950}{36.290} \times 100$

$= 17.47\%$

Mark-Down = Regular Price × Percentage Amount of Mark-Down

$= \quad 36.290 \quad \times \quad 17.47\% \quad = \text{BHD6.340}$

Example 3-7-2:

▶ In the bookstore advertisement the mark-down is 20%. The regular price of a book is BHD24.500. What is the mark-down on the book?

Solution:

Mark-down = Regular price × Percentage of mark-down

= 24.500 × 20%

= BHD4.900

Example 3-7-3:

▶ A tailor has a suit for sale marked at BHD35.000 which is shop-soiled. He marks it down by 33⅓%. What will its sale price be (round to the nearest fils)?

Solution:

1) Finding the mark-down:

Mark-down = Percentage of Mark-down × Regular price

= 33⅓% × 35.000 = BHD11.667

2) Subtract the Mark-down from the Regular price:

Sale price = Regular price – Mark-down

= 35.000 – 11.667 = BHD23.333

Example 3-7-3:

► A retailer sold a television regularly priced at BHD199.950 for BHD129.950. Find the percentage of mark-down on the regular price for the television?

Solution (1):

1) Finding the mark-down:

Mark-down = Regular price − Sale price

$$= \quad 199.950 \quad - \quad 129.950 \quad = \quad BHD\ 70.000$$

2) Divide the Mark-down by the Regular price:

$$\text{Percentage of Mark-down} = \frac{Mark-down}{Regular\ Price} \times 100$$

$$= \frac{70}{199.950} \times 100 \quad = 35\%$$

The percentage of mark-down on the regular price is 35%.

Solution (2):

1) You can find the sale price percentage:

$$\text{Sale price percentage} = \frac{129.950 \times 100}{199.950} \times 100 \quad = 65\%$$

2) Find Mark-down percent:

Mark-down = Regular price % − Sale price%

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

Mark-down	Sale Price	Regular Price
?	BHD129.950	BHD199.950
?	?	100

Exercises 3-7-1:

1. The regular price of a book is BHD9.200. What is the mark-down when the percentage of mark-down is 25%?

2. A book regularly priced at BHD26.250 is on sale for BHD19.950. What is the Mark-down?

3. A tailor has a suit for sale marked at BHD110.000 which is shop-soiled. He marks it down by 20%. What will its sale price be (round to the nearest fils)?

4. A retailer sold a stereo receiver regularly priced at BHD169.950 for BHD119.950. Find the percentage of mark-down on the regular price for the stereo receiver?

5. A retailer banks takings of BHD1,800.000; 20% of which is profit. How much profit did it make?

6. An item costing 35fils is marked up by a retailer by 20%. What does it sell for?

7. Complete the following table:

Item	Regular Price BHD	Sale Price BHD	Percentage of Mark-down on Sale price	Percentage of Mark-down on regular price
Pants	43.990	27.660	?	?
Shirt	?	7.850	33⅓%	?
Shoes	?	88.560	?	29%

1Q: The list price of a sewing machine is BHD500. A manufacturer gives a 20% discount to all retailers. What is the trade discount?

2Q: The list price of a washing machine is BHD4000 the net price BHD500. What is the discount rate?

3Q: A Manufacturer's net price is BHD800 for a fan with a list price of BH1200. What is the discount rate to the nearest percentage?

4Q: During the (big sales) season, a wholesaler offered discounts to retailers, at a rate of 15% for the first purchase of BHD 1,000, then 20% for the purchase of BHD 2,000 and 25% for purchases over BHD 2,000.

5Q: A woman bought BHD 25.800 of cigarettes – find the VAT and total payment.

6Q: Complete the following invoice:

Gulf Mobile

Telephone: 177xxxx78

goulfmobilebh@hotmail.com

Gulfmobile.bh

Muharraq – Kingdom of Bahrain

INVOICE

Date: 15-09-2022   Invoice No.: 00879

Name: Moh'd Ahmed Ali   TRN: 25254577xx33125

Qty	Items Details	Unit Price	Total Price
1	Phone	200.000	
2	Wireless Headphone	50.000	

Total BHD

Trade Discount 10%

Net Price

VAT 10%

Payment amount

Signature: _____

7Q: Find the unknown factors in the following table:

Item	List Price	Trade Discount	Net Price	VAT	Amount Payment
Home Internet	BHD 15.000	???%	BHD12.000	BHD….	BHD….....
Motor Oil	BHD……	10%	BHD…….	BHD….	BHD20.000
Fees of Bank	BHD 25.500	XXX	BHD…….	BHD….	BHD…...
Car Spare Parts	BHD ……	3%	BHD…….	BHD….	BHD276.450

8Q: A retailer's cost for an electric oven was BHD147.250. The oven is sold for BHD168.880. What was the mark-up?

9Q: A retailer sells a washing machine that costs BHD140.980 for BHD201.950. What is the percentage of mark-up based on cost?

10Q: A retailer pays BHD10.750 for a digital alarm clock and BHD0.880 in transportation charges. What is the retailer's cost?

11Q: A retailer sells on alarm clock that costs BHD10.040 for BHD14.950. What is the percentage of mark-up based on cost (to the nearest percentage)?

12Q: A retailer sells a can opener that costs BHD13.075 for BHD24.028. What is the percentage of mark-up based on cost (to the nearest percentage)?

13Q: A retailer knows that consumers will pay at most BHD16.000 for a shirt and wants a 35% mark-up based on cost. What is the maximum cost that the retailer pays for the shirt?

14Q: A retailer's cost for a jacket is BHD35.900. The retailer wants a 35% margin of profit based on the selling price. What is the selling price?

15Q: A retailer sells a washing machine that costs BHD140.980 for BHD201.950. What is the percentage of mark-up based on the selling price or margin of profit (to the nearest percentage)?

16Q: The percentage of mark-up based on the selling price of a stereo was 65%. The selling price was BHD256.950. What was the margin of profit?

17Q: A retailer knows that consumers will pay at most BHD4.500 for a calculator and wants a 17% margin of profit. What is the maximum cost that the retailer can pay for the calculator?

18Q: A retailer knows that consumers will pay at most BHD24.500 for a blender and wants a 25% margin of profit. What is the maximum cost that the retailer can pay for the blender?

19Q: A retailer has BHD595 with which to buy neckties. Consumers will pay BHD8.500 for each tie. The mark-up based on the cost is to be 30%. How many neckties can be purchased?

20Q: A retailer has BHD600 with which to buy shirts. Consumers will pay BHD15for each shirt. The margin of profit for each shirt is to be 20%. How many shirts can be purchased?

21Q: The regular price of patriot furniture is BHD840.000. The sale price is 25% off the regular price. What is the mark-down?

22Q: A sleeping bag is on sale at 35% off the regular price of BHD124.950. What is the sale price?

23Q: The regular price of an egg cooker is BHD17.900 and the sale price are BHD13.500. Find the percentage of Mark-down on the sale price?

24Q: Complete the following table:

Item	Regular Price BHD	Sale Price BHD	Percentage of Mark-down on Sale price	Percentage of Mark-down on regular price
Pants	40	26	?	?
Jacket	15.550	?	?	25%
Shirt	?	7.850	33⅓%	?

25Q: A trader buys bicycles to retail at BHD15.000. The trade discount is 331/3%. What should he pay for a bicycle?

26Q: What is the cost of a straight fence of six panels, supported by posts, if the panels
        are BHD5.000 each and the posts are BHD2.000 each? Labor, etc., costs BHD20.

28Q: Use the following link to answer the questions:

https://forms.office.com/Pages/ResponsePage.aspx?id=oeT_Cpw_90aTVwafLBO6BN_
Kho9-4ixNoHCKkWQCFIVUM0VVS1dCMlRPQTFKVUlCTjQwNkFPQTAwNy4u

Unit 4

Simple Interest

4

Learning Objective

By the end of this unit, the student should be able to:

- ► recognize the concept of interest.
- ► identify the concept of time value of money.
- ► explain the different types of the simple interest.
- ► identify the method of calculating Simple Interest for various periods
- ► identify the method of calculating trade & exact simple interest.

4.1 The Concept of Simple Interest

Simple interest is money you can earn by investing some funds. A percentage (the interest) of the principal is added to the amount, making your initial investment grow. When money is borrowed, interest is charged for the use of that money for a certain period of time the sum paid back includes. the principal (amount of money that was borrowed) and the interest. The amount of interest depends on the interest rate, the principal and borrowing period.

Simple interest is an interest paid or computed on the original principal of a loan. It is the amount of money that lenders charge for the use of their money.

Principal refers to the original amount of money borrowed. Interest, usually shown as a percentage, (for example, 6%) is also paid back. When you repay a loan or a credit card, part of your payment goes to the principal; some of it also goes toward paying interest.

Simple interest is generally charged for borrowing money for short periods of time. The total amount due at the end of each period is calculated against the original principal and the interest that was earned during that period.

> **Simple Interest:**
> ▶ Simple interest is the most basic way to calculate the amount you will earn or pay for an investment or loan.

When someone lends money to someone else, the borrower usually pays a fee to the lender. This fee is called "interest"; simple interest or flat rate. The amount of simple interest paid each year is a fixed percentage of the amount borrowed or lent over a certain period/ duration see figure (4-1-1).
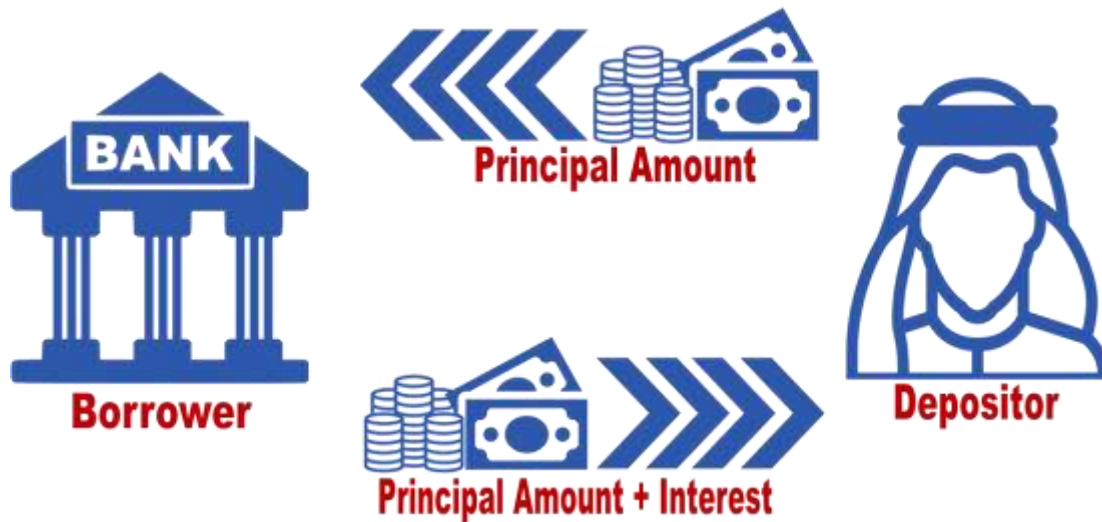
Figure (4-1-1): Simple Interest

Reading 4-1-1:

Bahrain follows a Since the Kingdom of exchange rate maintaining a fixed policy of United States dollar, the interest against the rates on Bahraini Dinar deposits and loans are not a policy objective for the Central Bank of

Bahrain (CBB). There are no target ranges of interest rates, and the official interest rate policy is limited to monitoring developments, publishing interest rate data, and encouraging transparency in financial markets.

The (CBB) does not maintain any administrative controls over the market determined interest rates. There are no interest caps (or floors), and the (CBB) does not seek in any way to influence directly the cost of credit. The (CBB) also does not maintain any controls that affect the distribution of credit in the economy. The private sector is free to allocate credit as it sees fit to maximize the return on its investments.

This was not always the case. Prior to 1994's, the (CBB) did have a policy of influencing the cost of credit in Bahrain. The exact mechanisms used changed over the years but included combinations of "recommended" interest rates, maximum profit spreads on loans, and ceilings on deposit and lending rates. The administrative controls were fairly extensive in the 1970's.

Over the 1980s and early 1990s, policy mechanisms were gradually dismantled In August 1994, the last policy tool governing consumer loans maximum interest rates were lifted. Since then financial markets in Bahrain have been free to respond to market forces.

The Concepts of Time Value of Money

A fundamental concept in Finance is the "time value of money". That is to say money in hand today is worth more than money that is expected to be received in the future. The reason is straightforward; a dinar that you receive today can be invested such that you will have more than a dinar at some future time. The concept of time value of money can be summarized and simplified as: "A dinar today is worth more than a dinar tomorrow."

The purpose of this section to introduce the concepts, terminologies, and mathematics of the time value of money. Understanding this material is crucial to understanding all sorts of solutions to financial problems in personal finance, investments, banking, insurance, etc. Technology made solving financial problems easier and faster via the use of financial calculators and spreadsheets. However, that does not affirm the importance of understanding the underlying mathematics. Combining the knowledge of the tech tools and financial mathematics is vital for this course and future business studies.

4.2 Formula of Simple Interest & Amount

To find the simple interest you should multiply the factors in the formula below:

Important Points 4-1-1:

$$\textbf{Simple Interest } = \textbf{Principal } \times \textbf{Interest Rate } \times \textbf{ Time}$$
$$SI \quad = \quad P \quad \times \quad R \quad \times \quad T$$

Principal:

▶ Principal is the money invested, deposited or borrowed.

▶ Interest Rate is the percentage (%) of the principal
 charged per period (year / annual).

▶ Time is the time period of the loan (years, months or days).

To find the total repaid/ received amount add the simple interest to the principal.
The following formula will be useful to find out this:

Important Points 4-1-2:

▶ The general formula for finding the repayment/ total investment amount:

$$\text{Repayment/ total investment amount} = \text{Simple interest } + \text{ Principal}$$
$$A \qquad = \qquad SI \quad + \quad P$$
$$\text{Or} \quad A \qquad = \quad P \ (\ R \times T \ + \ 1)$$
$$\text{Or} \quad A \qquad = \quad (P \ \text{x} \ R \times T) \ + \ P$$

4.3 Simple Interest Solved Example

Simple interest is when the interest on a loan or investment is calculated only on the amount initially invested or loaned. This is different from compound interest, where interest is calculated on the initial amount and on any interest earned. As you will see in the examples below, the simple interest formula can be used to calculate the interest earned, the total amount, and other values depending on the problem.

Now let us solve some examples to get acquainted with these formulae.

A) Simple Interest - Years

Example 4-3-1:

▶ Huda invested BHD 5,000 in N.B.B with interest rate of 4%. How much interest would she earn after 3 years? what is the total amount of her investment?

Solution:

Simple Interest = Principal × Interest Rate × Time

$$S.I = P \times R \times T$$
$$= 5,000 \times 4\% \times 3 = BHD600$$

Amount = Principal + Simple Interest

$$A = P + S.I$$
$$= 5,000 + 600 = BHD\ 5,600$$

Exercises 4-3-1:

1) Find the simple interest on BHD10,500 at 4½% for 5 years.

2) Saeed opens a saving account in a bank with an annual interest rate of 2.5%. If he deposits BHD580 to the account, how much interest will he earn after 4 years?

3) Calculate the simple interest of the following:

NO	Principal	Interest Rate	Time / Period	Interest	Amount
1	BHD 2,750	10 %	8 Years	BD???	BD???
2	$ 800	7¼ %	Six Years	$???	$???

Example 4-3-2:

► A trader borrowed BHD6,000 from BBK for 3.5 years at 5% simple annual interest. Find the interest and the total repaid at the end of period?

Solution 1:

Simple Interest = Principal × Interest Rate × Time

$$S.I = P \times R \times T$$
$$= 6,000 \times 5\% \times 3.5$$
$$= BHD1,050$$

Amount = Principal +   Simple Interest

$$A = P + S.I$$
$$= 6,000 + 1,050$$
$$= BHD7,050$$

Solution 2:

$$A = (P \times R \times T) + P$$
$$= (6,000 \times 5\% \times 3.5) + 6,000$$
$$= 1,050 + 6,000$$
$$= BHD7,050$$

Solution 3:

$$A = P \times [(R \times T) + 1]$$
$$= 6,000 \times [(5\% \times 3.5) + 1]$$
$$= 6,000 \times 1.175$$
$$= BHD\ 7,050$$

Exercises 4-3-2:

a) Ahmed invested BHD2,400 in a bank at simple interest rate 8% annually. What's the balance of the investment after 6 years?

b) Amal has BHD4,800 in her saving account. The annual simple interest rate is 3.9 %. How much money will be in her account in 2 years' time?

c) Mariam borrowed BHD38,000 as a student loan. The annual simple interest rate on her loan was 8.25%. She will be paying this loan off for 10 years. How much will Mariam pay?

d) Calculate the simple interest and amount of the following:

NO	Principal	Interest Rate	Time / Period	Interest	Amount
1	BHD 4,250	12%	Three Years	BHD???	BHD???
2	£ 1,200	2¾%	4.5 Years	£ ???	£ ???
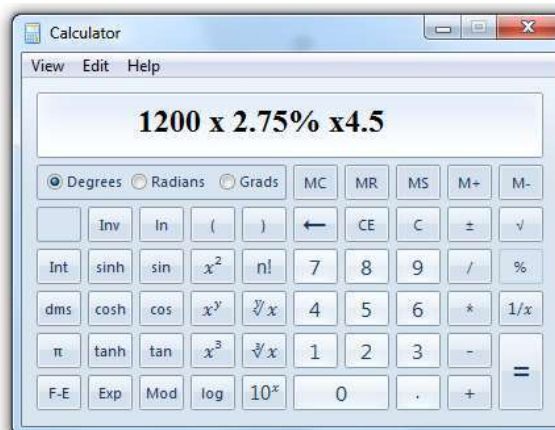
B) Simple Interest – Months

To use the simple interest formula, the borrowing/ investing duration (Time) should be in year. If time is given in months, simply divide the number of months by 12. This is because there are 12 months in a year. See figure (4-3-1) for number of days in a month.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
31	28/29	31	30	31	30	31	31	30	31	30	31
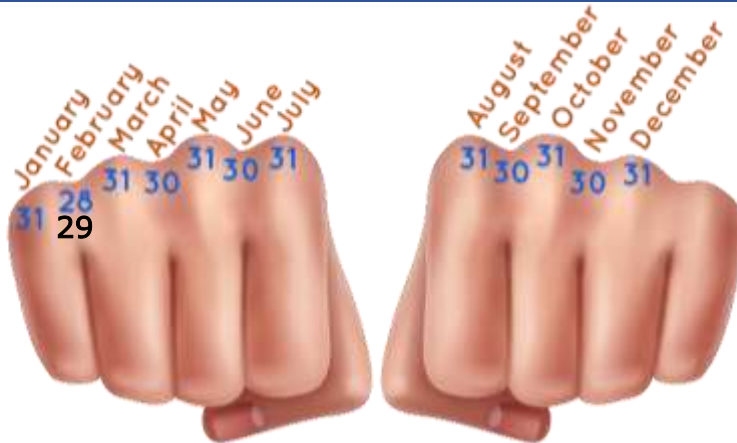
Figure (4-3-1): Number of Days in a Month

Example 4-3-3:

▶ Nasser deposited BHD1,000 into a saving account at a Bank for 9 months. The annual simple interest rate on this account is 3.5%. How much will Nasser have at the end of that period?

Solution:

Divide the number of months by 12

$$S.I = P \times R \times T$$
$$= 1,000 \times 3.5\% \times 9 \div 12$$
$$= BHD26.250$$

$$A = P + S.I$$
$$= 1,000 + 26.250$$
$$= BHD1,026.250$$

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Exercises 4-3-3:

1) What is the interest on BHD8,400 invested for 6 months in a bank at annual simple interest rate7%?

2) Nasser has a saving account with simple interest rate of 3.3% in a bank. If he deposits BHD1,200.
   How much would his investment worth after 10 months?

3) Ahmed and Osama are comparing their loans. Ahmed borrowed BHD4,000 at 6% for two years and Osama borrowed BHD 3,000 at 7% for 18 months. Who will bear the most interest?

C) Simple Interest - Years & Months

In some cases, the borrowing/ investment period is in years and months. The Simple Interest formula will have to be adjusted by converting year to months as in Example 4-3-4:

Example 4-3-4:

▶ BHD7,500 is deposited at simple interest rate 12% per year. Find the balance after 2 years and 5 months.

Solution:

S.I = P × R ×   T

     = 7,500 × 12% × 29 ÷ 12

     =   BHD2,175

A = P + S.I

     = 7,500 + 2,175

     = BHD 9,675

> 2 years × 12 = 24 months
> + 5 months
> 29 months

Exercises 4-3-4:

1. Calculate the simple amount interest on BHD900 at an annual simple interest rate 6¾% for one year and two months.

2. Nawal wants to borrow BHD4,000. If she was charged simple interest rate of 7% annually and the loan duration is three years and 8 months, how much will she repay?

3. An investment of BHD5,000 with simple interest rate of 9% annually. How much is it worth at the end of 4 years and 9 months?

d) Simple interest - Days (Counting Days)

For some transactions, the exact number of days in a borrowing or an investing period has to be calculated. This is the case when the beginning and end dates of a certain transaction are given. The calculation is based on the number of days in a calendar year. There are two ways to find the number of days: manually or by using a timetable as follows:

Reading 4-3-1:

Using time table for <u>a regular year</u> that divide by 4 with fraction (i.e year 2023), February is 28 days.

► For <u>a leap year</u> that divide by 4 without fraction (i.e year 2024), February is 29 days. We may need to add 1 if the date 29 is within the period.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Jan	Feb	Mar
31	28	31	30	31	30	31	31	30	31	30	31		31	29	31

2023 **2024**

Example 4-3-5:

► Find the number of days from 3rd May 2022 to 13th September 2022.

Solution:

$$T_1 = 13 \text{ Sep} \quad \text{From Timetable} = 256 \text{ days}$$

$$T_2 = 3 \text{ May} \quad \text{From Timetable} = 123 \text{ days}$$

$$\text{Time (T)} = T_2 - T_1$$

$$\therefore \text{ N. of days} = 256 - 123 = 133 \text{ days}$$

2021	
Jan	31
Feb	28
Mar	31
Arp	30
May	31
Jun	30
Jul	31
Aug	31
Sep	30
Oct	31
Nov	30
Dec	31

2022	
Jan	31
Feb	28
Mar	31
Arp	30
May	31
Jun	30
Jul	31
Aug	31
Sep	30
Oct	31
Nov	30
Dec	31

2023	
Jan	31
Feb	28
Mar	31
Arp	30
May	31
Jun	30
Jul	31
Aug	31
Sep	30
Oct	31
Nov	30
Dec	31

2024	
Jan	31
Feb	29
Mar	31
Arp	30
May	31
Jun	30
Jul	31
Aug	31
Sep	30
Oct	31
Nov	30
Dec	31

Time table

Day of month	31 Jan	28 Feb	31 Mar	30 Apr	31 May	30 Jun	31 Jul	31 Aug	30 Sep	31 Oct	30 Nov	31 Dec
1	1	32	60	91	121	152	182	213	244	274	305	335
2	2	33	61	92	122	153	183	214	245	275	306	336
3	3	34	62	93	123	154	184	215	246	276	307	337
4	4	35	63	94	124	155	185	216	247	277	308	338
5	5	36	64	95	125	156	186	217	248	278	309	339
6	6	37	65	96	126	157	187	218	249	279	310	340
7	7	38	66	97	127	158	188	219	250	280	311	341
8	8	39	67	98	128	159	189	220	251	281	312	342
9	9	40	68	99	129	160	190	221	252	282	313	343
10	10	41	69	100	130	161	191	222	253	283	314	344
11	11	42	70	101	131	162	192	223	254	284	315	345
12	12	43	71	102	132	163	193	224	255	285	316	346
13	13	44	72	103	133	164	194	225	256	286	317	347
14	14	45	73	104	134	165	195	226	257	287	318	348
15	15	46	74	105	135	166	196	227	258	288	319	349
16	16	47	75	106	136	167	197	228	259	289	320	350
17	17	48	76	107	137	168	198	229	260	290	321	351
18	18	49	77	108	138	169	199	230	261	291	322	352
19	19	50	78	109	139	170	200	231	262	292	323	353
20	20	51	79	110	140	171	201	232	263	293	324	354
21	21	52	80	111	141	172	202	233	264	294	325	355
22	22	53	81	112	142	173	203	234	265	295	326	356
23	23	54	82	113	143	174	204	235	266	296	327	357
24	24	55	83	114	144	175	205	236	267	297	328	358
25	25	56	84	115	145	176	206	237	268	298	329	359
26	26	57	85	116	146	177	207	238	269	299	330	360
27	27	58	86	117	147	178	208	239	270	300	331	361
28	28	59	87	118	148	179	209	240	271	301	332	362
29	29	0	88	119	149	180	210	241	272	302	333	363
30	30	0	89	120	150	181	211	242	273	303	334	364
31	31	0	90	0	151	0	212	243	0	304	0	365

Table (4-3-1): Exact days in a year calendar

Example 4-3-6:

► Find the number of days from 15 March, 2020 <u>to</u> 18 October, 2020.

Solution:

T_1 = 15 March From Timetable = 74 days

T_2 = 18 October From Timetable = 291 days

Time (T) = T_2 - T_1

.: N. of days (T) = 291 – 74 = 217 days

Example 4-3-7:

► Find the number of days from 9 November 2019 to 14 July 2020.

Solution:

Timetable (Fist year is a regular year)

T_1 = 9 November 2019   From Timetable = 313 days

T_2 = 14 July 2020 From Timetable = 195 days

Time (T) = 365 - T_1 + T_2

.: N. of days (T) = 365 - 313 + 195 = 247 +1 = 248 days

Exercises 4-3-5:

1) Compute time (duration) of the following:
   a) 16/2/2020   to   10/10/2020
   b) 22/11/2022   to   22/09/2023
   c) 9 Sep 2023   to   18 Mar 2024

2) Find the exact number of days for a loan from 24th Nov 2021 to 5th April 2022? (Using one of the tables only – pages 110-111)

4.4 Exact and Trade Simple Interest

When the borrowing / investment period require the calculation of the number of days, the type of interest need to be taken into consideration:

a) **Trade (Ordinary) Simple:** The calculation of this interest is based on 360 calendar days only. This method is used if it's required or when type of interest is not mentioned.

a) **Exact Simple Interest:** This interest is calculated based on the number of days per month per year using a 365 days calendar year. This method is used when its required or if currency is Sterling Pound (£) or Kuwaiti Dinar (KD).

These two kinds of simple interest are only applicable if the unit of time used is in days.

Tips 4-4-1:
▶ These two kinds of simple interest are only applicable if the unit of time used is in days.

Important Points 4-4-1:
▶ **Trade S.I:** $T.I = P \times R \times T \div 360$
▶ **Exact S.I:** $E.I = P \times R \times T \div 365$

Example 4-4-1:
▶ Ali invested BD 2,000 at 6% for 120 days. Find the Trade and Exact simple interest?

Solution:

Trade S.I : $T.I = P \times R \times T \div 360$

$= 2{,}000 \times 6\% \times 120 \div 360 \qquad = BHD\ 40$

Exact S.I : $E.I = P \times R \times T \div 365$

$= 2{,}000 \times 6\% \times 120 \div 365 \qquad = BHD\ 39.452$

Exercises 4-4-1:

1. Find the simple interest for the following:

    a)   BHD3,750 for 100 days at 5% annually.

    b)   KD2,400 for 90 days at 7.5% annually.

    c)   ¥ 15,900 for 144 days at 6¼% annually.

    d)   £5,725 for 75 days at 4% annually.

    e) $8,400 for 120 days at 12% annually.

2. Find the Trade and the Exact interest of a BD9500 loan for 250 days, if the simple interest rate is 8% annually?

3.   A trader invested £2000 in a bank at simple interest rate 6.5 %. What is the amount of the investment after 155 days?

4. Find the difference between the Exact interest and the Trade interest for BHD3,000 invested for 90 days at a 3.5% annual interest rate. Which type of interest is preferable for your investment?

5.   Abdulla deposited BHD4,000 at 8% from 5th February 2021 to 10th June 2022 - Find the interest if it is:

   a) Trade Interest

    b) Exact Interest

So far in this chapter, we have used the formula SI = P×R×T to find the simple interest on a loan or investment. However, sometimes you need to find the principal or rate or the time instead of the interest amount see figure (4-5-1). You can remember the different forms of the simple interest formula as shown in the diagram below:
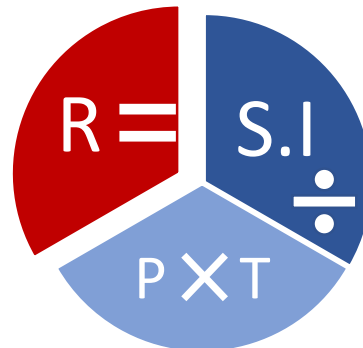
a- To Find the Principal:
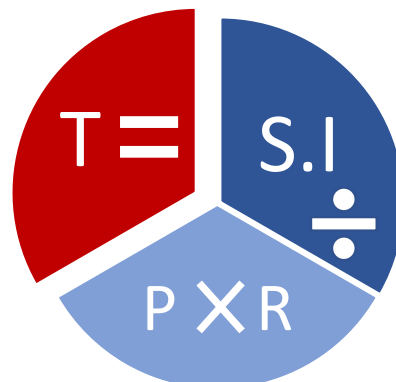
$$P = \frac{SI}{R \times T}$$
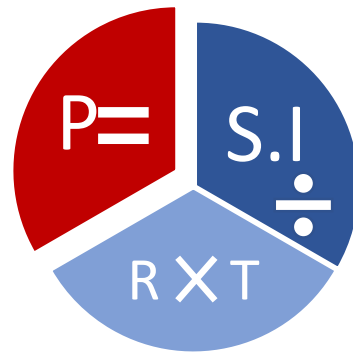
b- To Find the Interest Rate:

$$R = \frac{SI}{P \times T}$$

c- To Find the Time:

$$T = \frac{SI}{P \times R}$$

Figure (4-5-1): Calculating Simple Interest Factors

Finding the Principal

To find the Principal, use the formula below:

> **Important Points (4-5-1):**
>
> $$\text{Principal} = \frac{\text{Simple Interest value}}{\text{Rate} \times \text{Time}}$$
>
> $$P = \frac{SI}{R \times T}$$

Example 4-5-1:

▶ Salman wanted to borrow some money to expand his business. He was told he could borrow a sum of money for 18 months at 6% simple interest per year. He thinks he can afford to pay as much BHD540 in interest charges. How much money could he borrow?

Solution (1):

$$SI = \text{BHD540} \qquad I = 6\% \qquad T = \frac{18}{12} = 1.5 \text{ years}$$

$$P = \frac{SI}{R \times T}$$
$$= \frac{540}{6\% \times 1.5}$$
$$= \text{BHD6,000}$$
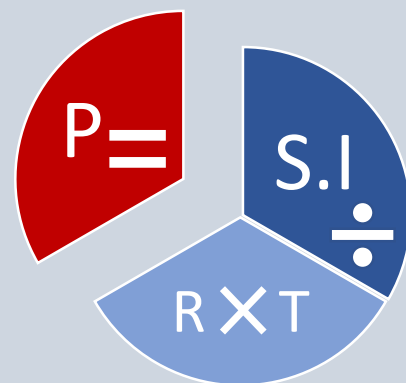
Solution (2):

$$SI = P \times R \times T$$
$$540 = P \times 6\% \times 1.5$$
$$540 = P \times 0.09$$
$$P = \frac{540}{0.09} = \text{BHD 6,000}$$

Exercises 4-5-1:

1- Mariam wanted to borrow some money for 18 months at 8% simple interest to pay BHD150. How much money could she borrows?

2- Find the Principal of a two-year loan, lent at 12% interest per year. The total simple interest is BHD 2,400.

3- Danna paid BHD675 interest for one-year and half at the simple interest rate is 10% paid annually. What was the principal?

Finding the Rate

To find the interest rate, use the formula below:

Important Points 4-5-2:

$$\text{Rate} = \frac{\text{Simple Interest}}{\text{Principale} \times \text{Time}} \times 100$$

$$R = \frac{SI}{P \times T} \times 100$$

Example 4-5-2:

▶ The owner of a restaurant borrowed BHD1,800 for 1.5 years to buy a food preparation table for his restaurant. If he paid BHD202.500 simple interest on the loan. What rate of interest did he pay?
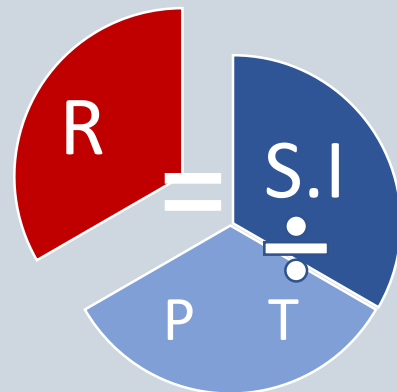
Solution (1):

$$SI = BHD202.5 \qquad P = BHD1,800 \qquad T = 1.5 \text{ years}$$

$$R = \frac{SI}{P \times T} \times 100$$

$$= \frac{202.500}{1,800 \times 1.5} \times 100$$

$$= 7.5\% \text{ annually}$$

Solution (2):

$$SI = P \times R \times T$$

$$202.500 = 1,800 \times R \times 1.5$$

$$202.500 = R \times 2,700$$

$$R = \frac{202.500}{2,700}$$

$$R = 0.075 \times 100$$

$$R = 7.5\% \text{ annually}$$

Exercises 4-5-2:

1- What is the interest rate of a loan of BHD2680, If BHD636.500 interest is paid the loan duration is two years and six months?

2- Find the simple interest rate of a BHD5000 loan that is made for three years and requires BHD1762.500 in interest.

3- Yasir borrowed BHD 6000 for 3.5years and paid BHD2800 simple interest. What was the annual interest rate?

Finding the Duration (Time/ period)

To find the Time/ period, use the formula below:

Important Points 4-5-3:

$$\textbf{Time} = \frac{\textbf{Simple Interest value}}{\textbf{Principale} \times \textbf{Rate}}$$

$$\textbf{T} = \frac{\textbf{SI}}{\textbf{P} \times \textbf{R}}$$

Example 4-5-3:

▶ Hamad borrowed BHD2,400 at 7% simple interest per year to buy a new computer for his business. If he paid BHD420 interest, what was the duration (time) of the loan?

Solution (1):

SI = BHD420   I = 7%   P = BHD2,400

$$T = \frac{SI}{P \times R}$$

$$= \frac{420}{2,400 \times 0.07}$$

$$= 2.5 \text{ years}$$

Solution (2):

$$SI = P \times R \times T$$

$$420 = 2,400 \times 7\% \times T$$

$$420 = 168 \times T$$

$$T = \frac{420}{168} = 2.5 \text{ years}$$
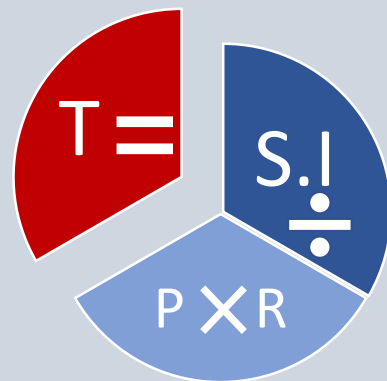
Exercises 4-5-3:

1. A loan of BHD16840 is borrowed at 9% simple interest and is repaid with BHD4167.90 interest. What is the duration (Time / period) of the loan?

2. Aisha borrowed BHD1500 at 8% annual simple interest. If she paid BHD866.250 interest, what the time period of the loan?

3. Find the unknown factors the following:

P	T	R	SI	A
BHD 450	??? days	5%	BHD 7.500	BHD??

1Q: Hassan borrowed BHD5,600 in the bank, the simple interest rate is 6% annually. Calculate the simple interest amount and the repayment sum after 4 years.

2Q: Khalil invested BHD3,400 from his bank – if the simple interest rate is 9%. Calculate the simple interest amount and the repayment sum after 10 months?

3Q: Find the simple interest values and the repayment total investment amounts for the following:
  a) BHD 4,500 at 3.5% for 4 years.
  b) BHD1,800 at 5% for 8 months.
  c) BHD2,300 at 6.5% for 3 years and 9 months.

4Q: Nada invested $5,000 in saving account with interest rate of 4¼%. How much interest would she earn after 2.5 years?

5Q: A trader deposited BHD6,300 in a bank, with a simple interest rate 5% annually. Find the simple interest and amount at the end of three years.

6Q: A businessman borrowed BHD15,000 from his bank for 6 years at simple interest rate 5% annually. Calculate the amount paid at the end of the period.

7Q: Huda invested BHD4,300 for 10 months at simple interest rate 4% annually. Calculate the amount she will receive.

8Q: Sara deposited BHD5,400 at a bank and the rate of interest 4. 5%. Find the interest value and the total investment after 2 years and 8 months

9Q: Rashed borrowed KD3,600 on 25 November, 2019 he will repay it on 6 March 2020 the interest rate 6 %. Find the Interest amount.

10Q: Find the difference between Exact and the Trade interest for BHD2,000 at simple interest rate 3% for 180 days.

11Q: Abdulla took out a BHD42,000 construction loan to remodel a house. The interest is 8.3% per year and will be repaid in 6 months. How much is paid back?

12Q: A bank agreed to lend money to his customer Maher at a special interest rate of 9% per year, on the condition that he borrow enough that he would pay his BHD500 in interest over a two- years period. What was the minimum amount Maher could borrow?

13Q: Ameena needed money for college. She borrowed BD6,000 at 12% simple interest per year. If she paid BHD360 interest, what was the duration (time) of the loan?

14Q: Bader borrowed BHD25,000 to purchase stock for his baseball card shop. He repaid the simple interest loan after 3 years. He paid interest of BHD6,750. What was the interest rate?

15Q: Find the unknown factors the following:

No	P	T	R	SI	A
A	$540	Four years	4¼%	$??	$??
B	BHD??	10 Months	6%	BHD 155	BHD??
C	KD5900	??? days	5%	KD??	KD6018
D	BHD2000	One year & six months	3.75%	BHD??	BHD2112.500

16Q: Find the Principal of a five-year loan, lent at 10% interest per year. The total repayment amount is BHD2800.

17Q: Marwa paid BHD1,280 interest for a two-year and half at the simple interest rate is 8% paid annually. What was the principal?

18Q: Find the simple interest rate of a BHD3500 loan that is made for three years and requires BHD 420 in interest.

19Q: Salman borrowed BHD4500 for 3.75 years and paid BHD 675 simple interest. What was the annual interest rate?

20Q: Safaa borrowed BHD2000 at 7% annual simple interest. If she paid BHD 980 interest, what the time period of the loan?

21Q: Find the unknown factors the following:

P	T	R	SI	A
KD 900	??? days	6%	KD 25.151	KD??

22Q: Use the following link to answer the questions:

(https://forms.office.com/Pages/ResponsePage.aspx?id=DQSIkWdsW0yxEjajBL ZtrQAAAAAAAAAAAa__Y9zjKhURUxEQ01JRUw3TDdHMkdPUlZFVktW QzBUTS4u)

TABLES

Timetable

Days of month	31 Jan	28 Feb	31 Mar	30 Apr	31 May	30 Jun	31 Jul	31 Aug	30 Sep	31 Oct	30 Nov	31 Dec
1	1	32	60	91	121	152	182	213	244	274	305	335
2	2	33	61	92	122	153	183	214	245	275	306	336
3	3	34	62	93	123	154	184	215	246	276	307	337
4	4	35	63	94	124	155	185	216	247	277	308	338
5	5	36	64	95	125	156	186	217	248	278	309	339
6	6	37	65	96	126	157	187	218	249	279	310	340
7	7	38	66	97	127	158	188	219	250	280	311	341
8	8	39	67	98	128	159	189	220	251	281	312	342
9	9	40	68	99	129	160	190	221	252	282	313	343
10	10	41	69	100	130	161	191	222	253	283	314	344
11	11	42	70	101	131	162	192	223	254	284	315	345
12	12	43	71	102	132	163	193	224	255	285	316	346
13	13	44	72	103	133	164	194	225	256	286	317	347
14	14	45	73	104	134	165	195	226	257	287	318	348
15	15	46	74	105	135	166	196	227	258	288	319	349
16	16	47	75	106	136	167	197	228	259	289	320	350
17	17	48	76	107	137	168	198	229	260	290	321	351
18	18	49	77	108	138	169	199	230	261	291	322	352
19	19	50	78	109	139	170	200	231	262	292	323	353
20	20	51	79	110	140	171	201	232	263	293	324	354
21	21	52	80	111	141	172	202	233	264	294	325	355
22	22	53	81	112	142	173	203	234	265	295	326	356
23	23	54	82	113	143	174	204	235	266	296	327	357
24	24	55	83	114	144	175	205	236	267	297	328	358
25	25	56	84	115	145	176	206	237	268	298	329	359
26	26	57	85	116	146	177	207	238	269	299	330	360
27	27	58	86	117	147	178	208	239	270	300	331	361
28	28	59	87	118	148	179	209	240	271	301	332	362
29	29	0	88	119	149	180	210	241	272	302	333	363
30	30	0	89	120	150	181	211	242	273	303	334	364
31	31	0	90	0	151	0	212	243	0	304	0	365