



## What Is This Module About?

Do you want to have your own business in the future? Do you want to learn how to compute for taxes, profits and losses in a business? Do you want to know how to convert pesos to dollars? If you had thought about the following questions, this module is for you!

All of us want a better future. One way to do this is to be an entrepreneur. An entrepreneur is a businessman/businesswoman who starts and runs his/her own business. To make a business prosper, one must have the proper attitude. You may study the module “Marks of a Successful Entrepreneur” to learn about these qualities. Aside from a good attitude, a successful businessman must have the skills necessary to make the business grow. One of these skills is the ability to use mathematics or solve number problems related to business.

Business constantly involves computations. A businessman must know how to find out if he/she is earning or losing money. He/she must know how to determine interest rates and compute taxes. Doing business is easier if business math is learned!

In this module, you will learn how to compute number problems related to business. You will study taxes, interest rates, profits, installment schemes, loses and currency or money conversions.

This module is composed of three lessons.

Lesson 1 – *Computing Interest and Monthly Amortization*

Lesson 2 – *Converting Currencies; and*

Lesson 3 – *Computing Taxes*



## What Will You Learn from This Module?

After studying this module, you should be able to:

- ◆ compute simple and compound interest for loans;
- ◆ calculate monthly amortization for installments schemes;
- ◆ convert currencies; and
- ◆ compute taxes.



## Let's See What You Already know

Before studying this module, take this simple test to determine what you already know about the topics covered.

- A. Mang Canor borrowed money to start a business. The bank told him that he has to pay a simple interest of 5% for 6 months on the amount he borrowed. If Mang Canor borrowed ₱10,000, how much interest does he have to pay on the 6<sup>th</sup> month? How much is the total amount he has to pay on the 6<sup>th</sup> month?

Interest to pay on the 6<sup>th</sup> month: \_\_\_\_\_

Total amount to be paid on the 6<sup>th</sup> month: \_\_\_\_\_

- B. If he has to pay compounded interest for ₱10,000 at 5% compounded quarterly, for a 6 months term, how much interest does he have to pay on the 6<sup>th</sup> month? What is the total amount he has to pay on the 6<sup>th</sup> month?

Interest to pay on the 6<sup>th</sup> month: \_\_\_\_\_

Total amount to be paid on the 6<sup>th</sup> month: \_\_\_\_\_

- C. Mang Canor had some problems related to his business. After 3 months, he borrowed ₱20,000 from a neighbor. His neighbor is charging 10% in compounded interest (5-6) scheme compounded every 6 months for a year. How much interest does he have to pay every quarter? How much does he have to give back to his neighbor at the end of the term?

Interest to pay in the . . .

First quarter \_\_\_\_\_

Second quarter \_\_\_\_\_

Third quarter \_\_\_\_\_

Fourth quarter \_\_\_\_\_

Total amount to be paid at the end of the term. \_\_\_\_\_

- D. Mang Canor had an American customer who wants to pay in U.S. dollars. If that customer bought goods amounting to ₱2,500, how much does he have to pay in dollars if the conversion rate is ₱50.20 = \$1.00?

Payment in dollars: \_\_\_\_\_

- E. After a year, Mang Canor earned a total of ₱50,000 pesos from his business. If he has to pay ₱3,075 + 15% of excess over ₱40,000, how much is his tax due for that year?

Tax Due to be paid for ₱50,000 earnings: \_\_\_\_\_

Well, how was it? Do you think you fared well? Compare your answers with those in the *Answer Key* on pages 30–31 to find out.

If all your answers are correct, very good! This shows that you already know much about the topic. You may still study the module to review what you already know. Who knows, you might learn a few more new things as well.

If you got a low score, don't feel bad. This means that this module is for you. It will help you understand important concepts that you can apply in your daily life. If you study this module carefully, you will learn the answers to all the items in the test and a lot more! Are you ready?

You may go now to the next page to begin Lesson 1.

## Computing Interest and Monthly Amortization

Doing business involves constantly computing or solving number problems. A successful businessman knows how to properly compute for interest rates and monthly amortization on products bought on installment. Business—related problems usually require a combination of several mathematical operations. It is best that you read the module on basic math and review **addition, subtraction, multiplication** and **division**. If you feel that you are already familiar with these operations, you are ready for the topics covered in this module.

In this lesson, you will learn how to compute some business-related problems.

After studying this lesson, you should be able to:

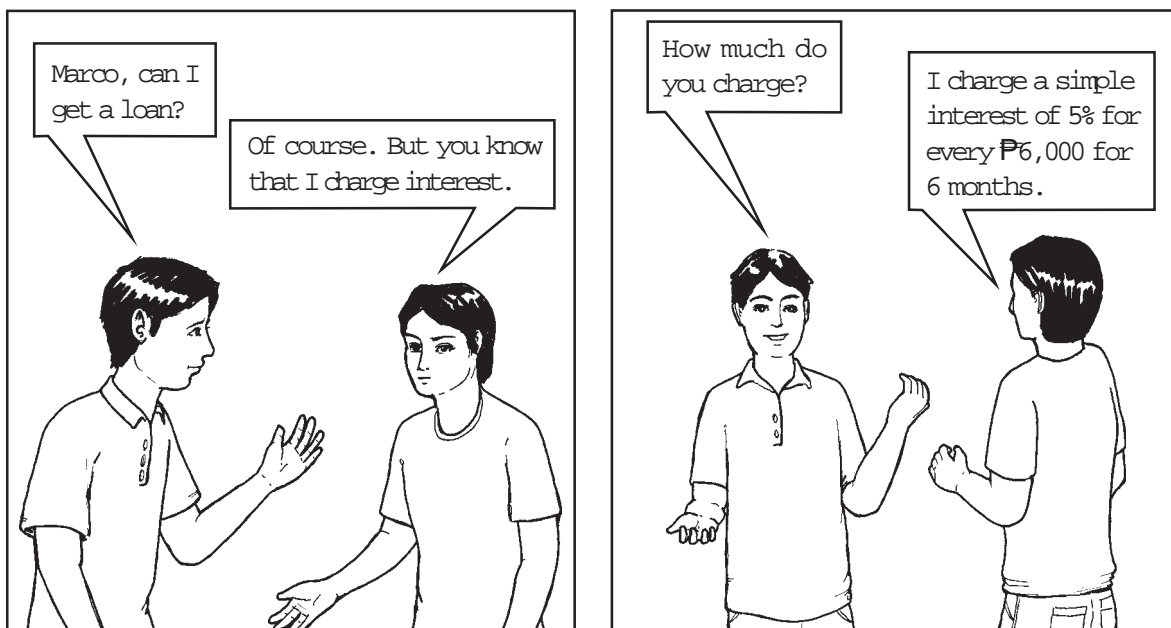
- ◆ compute simple and compound interest for loans; and
- ◆ calculate monthly amortization for installment schemes.

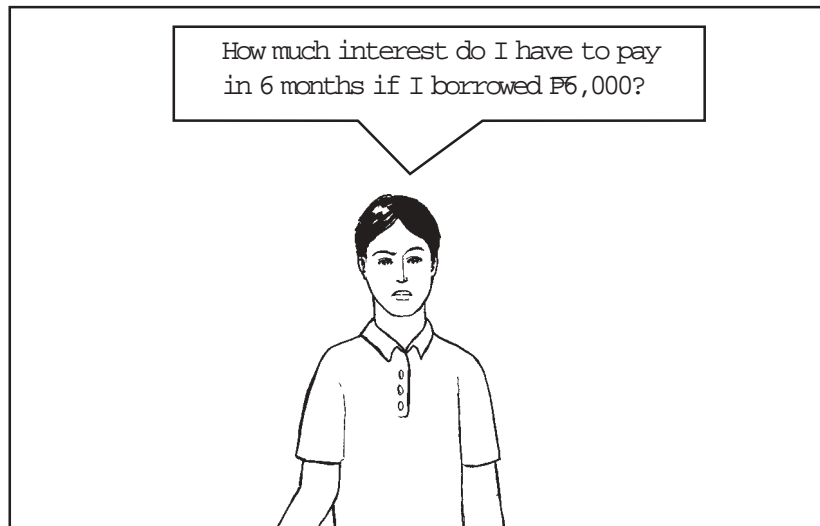
Are you now ready to study business math? Read the story below.



### Let's Read

Philip runs a sari-sari store. He plans to expand his business so he decided to get a loan from his cousin, Marco.





Do you know how to compute for simple interest? Do you know why an interest is charged for money borrowed?

## Interest Rates

### Simple Interest

If you borrow a car from a car rental company or if you live in someone else's house or apartment, you have to pay **rent**. Like paying rent for the use of a car or a house, you also have to pay rent for the money you borrowed. This is called **interest**. People like Marco earn by charging interest on loans. Banks earn most of their income from the interest that people pay for the amounts they borrow. How much interest one has to pay depends on three factors: **the principal, the time and the interest rate**.

The **principal** is the initial amount borrowed. For example, if Marco lends Phillip ₱10,000, that amount would be the principal of his loan. The **time**, also known as **term** is the number of units expressed as days, months or years for which the principal was borrowed. In Marco's case, he gives out loans with a term of 6 months. The **interest rate** or simply **rate**, is the percentage of the principal amount that the borrower has to pay for a term. For example, to get 5% of ₱100, multiply ₱100 by .05. 5% of ₱100 is ₱5.00.

To get 30 % of ₱100, multiply ₱100 by .30. 30% of ₱100 is ₱30.00. This is the amount that a person has to pay as interest for the principal in a term.

How is simple interest computed?

The formula for simple interest is:

$$I = PRT$$

Where I = interest

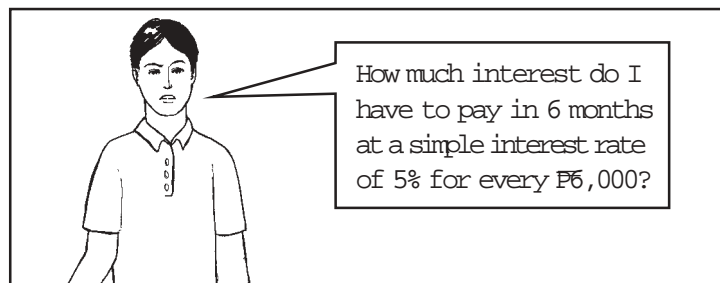
P = principal (the amount of money borrowed)

R = rate at which the interest is to be paid

T = term or length of time the debt (money owed) has to be paid

A **formula** is also known as a **mathematical equation**. It is used to compute for needed values. To compute for interest, the formula  $I = PRT$  is used. You need to substitute the given values for the principal, rate and term to compute for the interest.

Let us apply this formula to answer Phillip's question.



Study the computation for simple interest below.

$$I = PRT \quad P = \text{₱}6,000 \text{ (principal amount borrowed)}$$

$$R = .05 \text{ (this means 5\%)}$$

$$T = \frac{6}{12} \text{ (for a term of 6 months in one year)}$$

$$I = \text{₱}6,000 \times .05 \times \frac{6}{12} \text{ (or } \frac{1}{2}\text{)}$$

$$I = \text{₱}150$$

Phillip has to pay Marco ₱150 in interest after 6 months for the ₱6,000 he borrowed! How much money does he have to pay Marco after 6 months?

To compute for the total amount of money the lender (one who lends money or gives out loans) should receive after the term of the loan, the formula is:

$$A = P + I$$

Where A = total amount of pesos the lender should receive

P = principal

I = interest (Marco's earnings)

Do you remember the principal amount the Phillip plans to borrow? If you answered **₱6,000**, you are correct. You already have the value for the interest based on the previous computation. That would be **₱150**. You have to substitute these values using the formula to compute for the total amount the lender should receive after the term.

Substituting these values. . .

$$A = ₱6,000 + ₱ 150$$

$$A = ₱6,150$$

Phillip should pay Marco a total of **₱6,150** after 6 months.

Were you able to follow the computation for the interest and the total amount at the end of the term?



## Let's Try This

Let's see if you can now use the formula you learned to compute simple interest. See if you can also compute and the total amount a borrower should pay to the lender at the end of the term. Solve the given problems on the next page. You may use the back of this page or a separate sheet of paper for your computations.

### Problem # 1:

What is the simple interest on **₱5,000** for 3 years at 6% interest per year? How much should the lender receive at the end of the term?

### Problem # 2:

What is the simple interest on **₱2,500** for 5 months at 10% interest per year? What is the total amount that the borrower should pay at the end of the term?

Compare your answers with those found in the *Answer Key* on page 32. Did you get all items correct? That's good! If you did, it means that you now know how to compute for simple interest. If you were not able to get the correct answer, review your computations. You may now move on to study the computation for compounded interest.

## Compounded Interest

People usually borrow money from banks or other lenders to start businesses or increase their business capital. Banks are a good place to keep money because it pays interest for deposits **compounded** (computed) quarterly. Banks, too, lend money and charge interest on the principal amount borrowed compounded at any of these rates: **quarterly** (every 3 months), **semi-annually** (half-yearly) or **annually** (yearly).

What is the difference between a simple interest and a compounded interest? In a **simple interest** scheme, only the principal amount earns interest in a term. In **compounded interest**, at stated intervals during the term of transaction (quarterly, semi-annually, annually), the interest is regularly added to the principal and the sum thereafter earns interest. Would banks earn more from using the compounded interest scheme on the loans they give out?

Loans from banks have higher interest charges because they charge compounded interest and not simple interest. Bank deposits also earn more from this interest scheme.

To understand this further, let us go back to Phillip.

Phillip decided to borrow ₱12,000 from Marco at a **simple interest** of 5% for every ₱6,000 for 6 months. How much interest must Phillip pay Marco at the end of the term? What is the total amount that Marco should receive?

The formula for simple interest is  **$I = PRT$**

$$\begin{aligned}\text{Where } P &= \text{₱}12,000 \\ R &= 10 \text{ (10\% since it is at 5\% for every ₱6,000)} \\ T &= 6/12 \text{ (6 months in a year)} \\ I &= \text{₱}12,000 \times .1 \times \frac{6}{12} \\ \mathbf{I} &= \mathbf{\text{₱}600}\end{aligned}$$

The formula for the total amount to be paid is  **$A = P + I$**

$$\begin{aligned}\text{Where } P &= \text{₱}12,000 \\ I &= \text{₱}600 \\ A &= \text{₱}12,000 + \text{₱}600 \\ \mathbf{A} &= \mathbf{\text{₱}12,600}\end{aligned}$$

Phillip must pay Marco ₱600 in interest at the end of the term of 6 months. If the principal is added to this amount, Marco should receive a total amount of ₱12,600.

Philip borrowed ₱12,000 from a bank at a **compounded interest** of 5% for every ₱6,000, compounded quarterly (every for 3 months). How much interest must Phillip pay the bank at the end of the 6 months? What is the total amount that Phillip has to pay the bank at the end of the term?

Given :

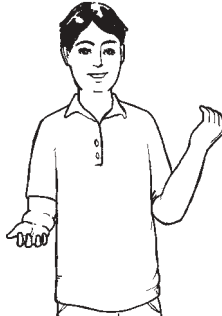
$$\begin{aligned}P &= \text{₱}12,000 \\ R &= .10 \text{ (10\% since it is at 5\% for every ₱6,000)} \\ T &= \text{quarterly (3 months = 1 quarter)} \\ \frac{3}{12} &= \frac{1}{4}\end{aligned}$$



Solution:

$$I = PRT$$

Do you recognize this formula? Is it the same formula used to compute for simple interest? If you answered yes, you are correct. This formula is also used to compute for compounded interest but with a difference. Study the computation to find out what the difference is.



**First Quarter**

$$I = \text{₱}12,000 \times .1 \times \frac{1}{4}$$

$$I = \text{₱}300$$

$$\text{New Balance (A = P + I)} = \text{₱}12,000 + \text{₱}300 = \text{₱}12,300$$

**Second Quarter**

$$I = \text{₱}12,300 \times .1 \times \frac{1}{4}$$

$$I = \text{₱}307.50$$

$$\text{New Balance (A = P + I)} = \text{₱}12,300 + \text{₱}307.50 = \text{₱}12,607.50$$

Total Interest Earned at the end of the term:

$$\text{Total Interest} = \text{New Balance at end of term} - \text{Principal}$$

$$\text{₱}12,607.50 - \text{₱}12,000 = \text{₱}607.50$$

Based on the above computation, Phillip must pay the bank **₱607.50** in interest at the end of the 6 months. He has to pay a total amount of **₱12,607.50** at the end of the term (6 months).

What do you notice about the computation for compounded interest? The formula for computing for simple interest is also used. But in this case, another computation using the same formula ( $I=PRT$ ) is done for the second quarter.

Did the principal change for the second quarter? Yes. A new principal is used. This is the principal based on the new balance for the first quarter.

Write the total amount that Phillip has to pay at the end of the term to Marco (**at simple interest**) and to the bank (**at compounded interest**) on the blanks below.

To Marco:

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To the bank:

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In which interest scheme would he pay more interest?

The total amount based on a simple interest scheme is **₱12,600**. On compounded interest, Phillip has to pay **₱12,607.50**. He has to pay **₱7.50** more ( $₱12,607.50 - ₱12,600 = ₱7.50$ ) to the bank than to Marco if he borrows the exact same amount of money, at the same term and interest rate. The different interest schemes used would mean a difference in the amount of interest paid.

Is the difference of **₱7.50** significant? It may not be significant yet because the principal is not very big. Imagine how much difference in terms of interest would there be if you borrow millions of pesos! Loans with a compounded interest scheme are charged more interest!

In what interest scheme would your savings earn more, simple interest or compounded interest?

Savings earn more in a compounded interest scheme. If you are to start a business, better borrow using a simple interest scheme and save your money in banks where a compounded interest scheme is used. This way, you avoid paying more interest on your loans. Also, you earn more interest from your savings.



For a compounded interest scheme, the interest is paid at the end of the term (quarterly, semi-annually or annually). Both the original deposit (principal) and the earned interest are retained in the deposit. Computations for the interest for the next terms are based on the new balance of in the deposited account.

Let's try another one.

If Ana deposits **₱2,000** at **8%** compounded quarterly, how much interest will her money earn in a year?

Write down the given values in this problem for the following:

Principal \_\_\_\_\_

Rate \_\_\_\_\_

Term \_\_\_\_\_

Compare your answers with mine on the next page. Study the computation for compounded interest based on the above problem.

Given :  $P = \text{₱}2,000$   
 $R = 08 (8\%)$   
 $T = \text{quarterly (3 months = 1 quarter)}$   
 $\frac{3}{12} = \frac{1}{4}$

Solution:  $I = \mathbf{PRT}$

**First Quarter**  $I = \text{₱}2,000 \times .08 \times \frac{1}{4}$   
 $I = \text{₱}40$

New Balance ( $A=P+I$ ) =  $\text{₱}2,000 + \text{₱}40 = \text{₱}2,040$

**Second Quarter**  $I = \text{₱}2,040 \times .08 \times \frac{1}{4}$   
 $I = \text{₱} 40.80$

New Balance ( $A=P+I$ ) =  $\text{₱}2,040 + \text{₱}40.80 = \text{₱} 2,080.80$

**Third Quarter**  $I = \text{₱}2,080.80 \times .08 \times \frac{1}{4}$   
 $I = \text{₱}41.616$

New Balance ( $A=P+I$ ) =  $\text{₱}2,080.80 + \text{₱}41.616 = \text{₱}2,122.416$

**Fourth Quarte**  $I = \text{₱}2,122.416 \times .08 \times \frac{1}{4}$   
 $I = \text{₱}42.448$

New Balance ( $A=P+I$ ) =  $\text{₱}2,122.416 + \text{₱}42.448$   
 $= \text{₱}2,164.864$

**Total Interest Earned at the end of the term:**

New Balance at end of term – Principal

$\text{₱}2,164.864 - \text{₱}2,000 = \text{₱}164.864$

Ana's deposit would earn **₱164.864** in interest in a year.



## Let's Try This

Use the formula you learned to compute for the compounded interest to be paid by the borrower or earned by the depositor in the given problems on the next page. Use the back of this page or a separate sheet of paper for your computations.

### Problem # 1:

What is the compounded interest of a deposit of ₱3,400 for 2 years at 6% compounded quarterly? How much can the depositor withdraw from the bank at end of the 2<sup>nd</sup> year?

### Problem # 2:

What is the compounded interest to be paid by a borrower on the first year for ₱2,500 at 5% compounded quarterly? What is the total amount that the borrower should pay to the bank at the end of the term?

Compare your answers with those found in the *Answer Key* on pages 33–34. Did you get all items correct? Great! If you did, you now know how to compute for compounded interest. If you were not able to get the correct answer, review your computations.



## Let's Think About This

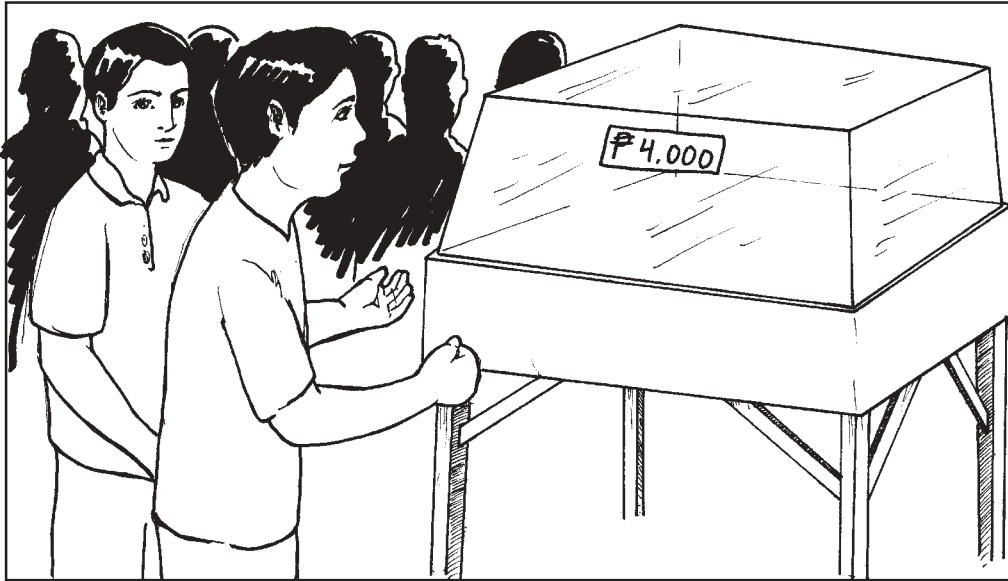
Some unscrupulous (unjust) moneylenders charge very high compounded interest rates. This practice is called 5-6 in the Philippines. Have you heard of **5-6** before?

This interest scheme means that after a term, the ₱5.00 that one borrowed (principal) would be charged ₱1.00 in interest. That's about 20%, usually charged per month. What do you think of this practice?

This practice is a form of **usury** or overcharging of interest rates. Some people need money so badly that they grab the opportunity to borrow money even at very high interest rates. Some moneylenders become rich this way. This is not a good practice because it puts a lot of people in debt. This should be discouraged.

### Computing Monthly Amortization for Installment Schemes

Phillip's business is doing well. He wanted to buy a new glass display case for his groceries but he cannot afford to buy one in cash. He opted to buy one on installment basis instead. However, he realized that it would be cheaper for him to pay in cash because the company adds an additional 20% per year for a display case bought on installment basis for 6 months.



Should Phillip buy in cash or installment basis? He checked his savings. He has only ₱3,000 in the bank. A glass display case costs ₱4,000. He decided to buy one on installment.

How much does Phillip have to pay per month? The company adds an additional 20% per year if the display case was bought on installment basis for 6 months.

First, use the formula you learned to compute for simple interest:

$$I = PRT$$

Where I = interest

P = principal (the original cost of the product purchased)

R = rate at which the interest is to be paid

T = term or length of time the debt (money owed) has to be paid

$$I = PRT \quad P = ₱4,000 \text{ (principal cost)}$$

$$R = .20 \text{ (this means 20\%)}$$

$$T = \frac{6}{12} \text{ (for a term of 6 months in one year)}$$

$$I = ₱4,000 \times .20 \times \frac{6}{12}$$

$$I = ₱400$$

Phillip has to pay the company an additional **₱400** in interest (also known as surcharge for installment schemes) after 6 months for the display case. He could have bought it ₱4,000 if he paid in cash.

How much would be the total cost of the display case on a 6-months installment scheme at 20% every year?

Formula:

$$A = P + I$$

Where A = total amount one has to pay on installment purchases

P = principal cost of the goods bought

I = interest (surcharge added by the company on top of the original price)

$$A = \text{P}4,000 + \text{P}400$$

$$A = \text{P}4,400$$

Phillip will have to pay a total of **₱4,400** in 6 months because he chose to pay by installment. Would buying on installment basis be cheaper or more expensive than buying in cash? He has to pay **₱400** more than if he pays in cash. Paying in cash when buying products is cheaper.

How much should Phillip pay per month? These payments or installments are also called **monthly amortization**.

**Formula for computing monthly amortization (payments) on installment basis:**

$$M = A / N$$

Where

M = monthly amortization

A = total amount one has to pay on installment purchases

N = number of months to pay on installment basis

$$M = \text{P}4,400 / 6 \text{ (for 6 months)}$$

$$M = \text{P}733.33$$

Phillip has to pay a monthly amortization of **₱733.33** for 6 months for the display case he bought on installment basis.



## Let's Think About This

Why do companies impose a surcharge on goods or products bought by installment? Is this fair?

Companies add interest or surcharge on top of the principal amount for goods or products bought by installment. When products are bought by installment, the payment is not completed until the end of the term. The company receives less money from it than when products are paid for in cash. This money is needed by the company to buy new products to be sold at a profit. This practice is fair because when you buy by installment, it would be like borrowing money, too. This becomes unfair if interest rates on installments are too high.

What interest rate on products bought on installment basis would be too high? 5%? 10% How about 15%?

Generally, if the interest on installments is greater than 20% for a 6-month term, it is already too high. If you find out that this would be the interest for a product you plan to buy on installment basis, what should you do?

It would be better for you to save and pay in cash unless you need that product immediately.



## Let's Try This

Compute the monthly amortization for the problems given below. Like in the previous exercises, use the back of this page or a separate sheet of paper for your computations.

### Problem # 1:

What is the monthly amortization for a television set bought by installment if the unit costs ₱9,500 if paid in cash? The appliance store has a surcharge of 30% a year for purchases on installment basis, The term the customer chose is 8 months.

### Problem # 2:

A refrigerator originally costs ₱11,700 in cash. What is the monthly amortization for this refrigerator if a surcharge of 25% a year is added for purchases on installment basis, The customer wants to pay in installments for 6 months.

Compare your answers with those found in the *Answer Key* on pages 34–35. Are your answers correct? That's very good.

If you did, you now know how to compute for monthly amortization. Review the lesson and change your incorrect answers before proceeding to the next topic.

You have now learned how to compute simple interest, compounded interest and monthly amortization on goods bought on installment basis. These are important skills that a businessman or entrepreneur must develop in order to make his/her business grow.



## Let's Try This

Answer the questions below. Make your computations on a separate sheet of paper. You may use a calculator if you have and know how to use one.

### Simple Interest

What is the simple interest on ₱16,000 for 5 years at 4% interest per year? How much should the lender receive at the end of the term?

### Compounded Interest

What is the compounded interest of a bank deposit of ₱6,500 for 1 year at 6% compounded quarterly? How much can the depositor withdraw from the bank at end of the year?

### Monthly Amortization

What is the monthly amortization for a radio bought by installment if the unit costs ₱2,600 if paid in cash? The appliance store charges 24% a year in interest for purchases on installment basis. The term the customer chose is 6 months.

Compare your answers with those found in the *Answer Key* on pages 35–36. Are your answers correct? That's very good.

If not, go back to your answers and make the necessary corrections. Make sure that you review your computations for accuracy (correctness).

If you are ready, you may proceed to the next lesson on page 22.

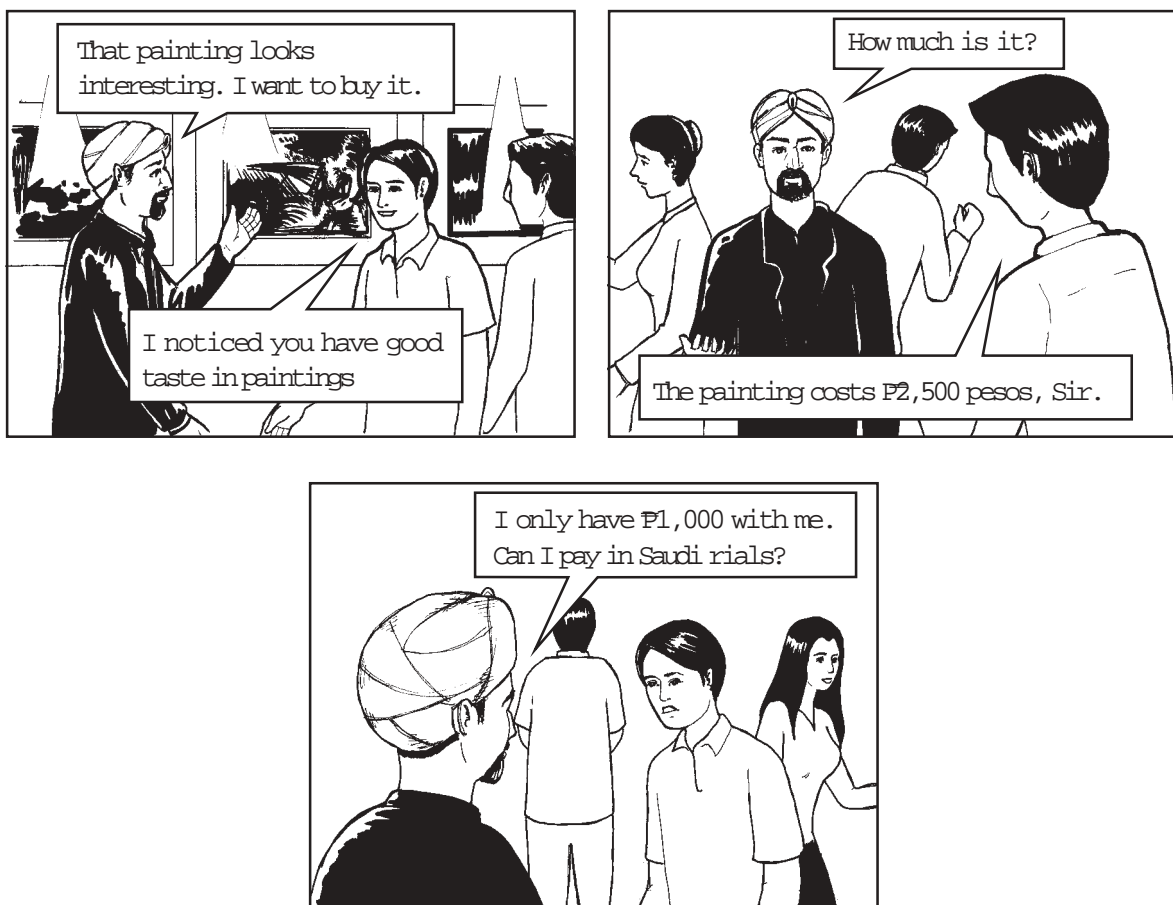


## Converting Currencies

In *Lesson 1* you learned how to compute for interest on loans and calculate monthly amortization for goods bought on installment basis. These are skills that an entrepreneur needs in order to run a business well. But what if you have a customer who comes from another country and wishes to pay using his/her country's currency (money)? Would you refuse to do business or sell something to him/her? That would not be a good idea. Businesses are now beginning to become global. The more people you make transactions or do business with, the more chances you have to earn. In this lesson, you will learn how to convert currencies (money) from one country to another.



### Let's Read This



If you were Mr. Santos, would you accept this customer's money? How sure are you that what he pays is really equivalent to ₱2,500?

## Converting Currencies

A currency is a unit of exchange. It refers to money used to buy goods and services. Within one country, a single currency is usually used. The country's government issues these **currencies** or **bank notes** or **bills**.

Do you know what the **currency of the Philippines** is? If you answered **pesos**, you are correct. Do you know the currencies used in other countries? Take this test and find out.



### Let's Try This

Match the country on Column A with the currency on Column B. Write only the letters.

Column A	Column B
Country	Currency
_____ 1. Mexico	a. Pound
_____ 2. Russia	b. Yen
_____ 3. U.S.A.	c. Francs
_____ 4. Japan	d. Lira
_____ 5. Saudi Arabia	e. Peso
_____ 6. India	f. Rubles
_____ 7. Great Britain	g. Dollar
_____ 8. Italy	h. Rupee
_____ 9. Switzerland	i. Rial
_____ 10. Thailand	j. Baht

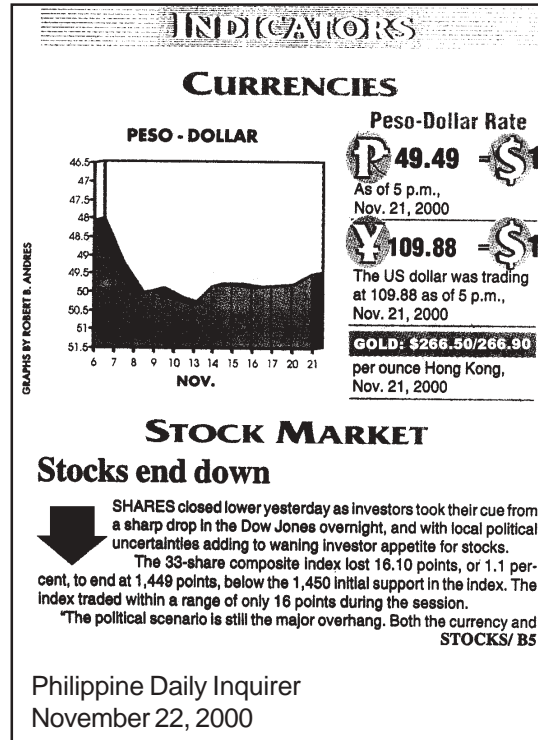
Compare your answers with those found in the *Answer Key* on page 36.

Can you think of businesses where the knowledge of converting one currency to another is needed?

Countries often do business with one another. The Philippines **exports** (sells to another country) products like *abaca* and coconut oil. We **import** (buy from other countries) products like electronics devices and machinery. For an entrepreneur in an export or import business to succeed, he/she must know how to convert one currency to another. People whose business often deals with foreigners also need this skill. Since a lot of Filipinos now work abroad and bring in foreign money, knowing how to convert one currency to another is needed by almost all businessmen.

To convert one currency to another, you must first consult the **exchange rate** for currencies. This is a list of currencies all over the world with their equivalent exchange rate in the Philippine peso. These are changed daily and can be found in newspapers, in banks and in money changers.

Study the exchange rate for date: \_\_\_\_\_ found in \_\_\_\_\_ Newspaper.



To use this exchange rate, find the equivalent value in peso of the currency you wish to convert.

For example:

Based on the above exchange rate, write down the exchange rate to pesos of the following currencies:

1. U.S. dollar \_\_\_\_\_
2. Saudi rials \_\_\_\_\_
3. Thai baht \_\_\_\_\_
4. Hongkong dollar \_\_\_\_\_
5. Japanese yen \_\_\_\_\_
6. Kuwaiti dinar \_\_\_\_\_

Currencies have different exchange rates. These rates change every day. The U.S. dollar, for example, has an average exchange rate of \$1 to ₱50.00. The Hongkong dollar is about HK\$1 to ₱7.00. Converting currencies use simple multiplication or division.

Study how to convert currencies below.

1. How much would U.S.\$45.00 be in Philippine pesos if the exchange rate is \$1.00 = ₱51.20?

$$\text{Solution: } \text{US\$}45.00 \times \frac{\text{₱}51.20}{\text{US\$}1.00} = \text{₱}2,304.00$$

2. How much would HK\$342.20 be in Philippine pesos if the exchange rate is HK\$1.00 = ₱7.20?

$$\text{Solution: } \text{HK\$}342.20 \times \frac{\text{₱}7.20}{\text{HK\$}1.00} = \text{₱}2,463.84$$

What do you notice about the above computations? Converting currencies is simple because only multiplication or division is used. Note, too, that the values are placed so their signs (like US\$ or P) **cancel out**. Signs are cancelled out as shown above.

Let's study some more examples of currency conversions.

3. Convert ₱93,500 into U.S. dollars if the exchange rate is \$1.00 = ₱51.20.

$$\text{Solution: } \text{₱}93,500 \times \frac{\text{US\$}1.00}{\text{₱}51.20} = \text{US\$}1,826.17$$

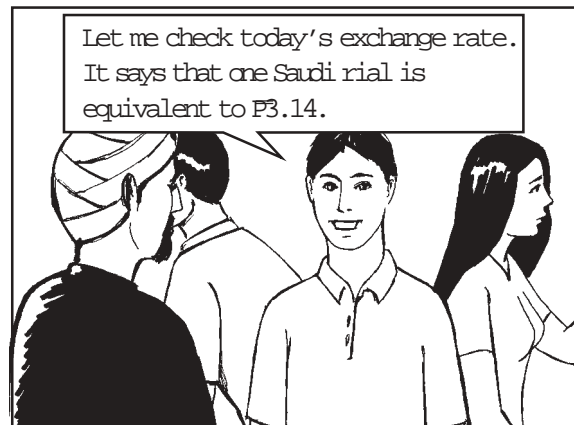
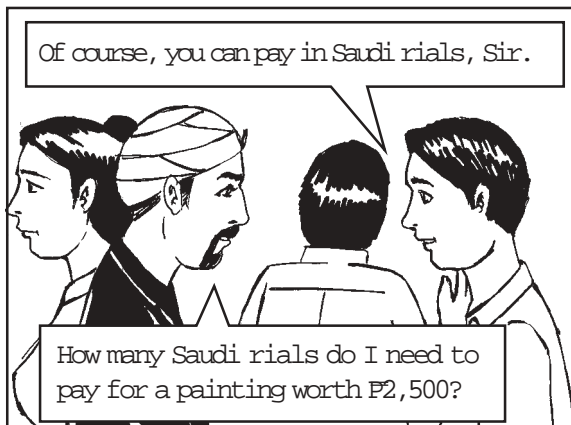
5. Convert ₱450.00 to Hongkong dollars. The exchange rate is HK\$1.00 = ₱7.20.

$$\text{Solution: } \text{₱}450.00 \times \frac{\text{HK\$}1.00}{\text{₱}7.20} = \text{HK\$}62.50$$

Do you now know how to convert currencies? It's quite simple, isn't it?

Use a calculator if you have one. It will make conversion easier for you.

Let's go back to Mr. Santos and his Arab customer.



How much should the customer pay in Saudi rials?

If you answered that ₱2,500 is equivalent to 7850.00 Saudi rials, you are correct.



## Let's Think About This

Why do the money of different countries have different values? Why do exchange rates change daily? What does the value of the Philippine peso say about our economy?

Currency values depend on the economic status of that country and other factors. Usually, the richer the country is, the more valuable its currency becomes. For example, the Philippine peso currently has a lesser value than the US dollar. This is because the United States is more economically powerful than the Philippines.

Exchange rates change daily because factors called “**market forces**” affect the value of each currency. For example, if a country goes to war, its currency's value can either go up or down depending on the outcome of the war.

Learning how to convert one currency to another is important yet it is very easy to do. A good entrepreneur should have this skill.



## Let's Try This

Answer these questions on currency conversions. Use a separate sheet of paper for your computations. If you have a calculator and know how to use it, you may do so. It would make computing easier and faster.

1. How much would Lira 150,000 be in Philippine pesos if the exchange rate is Lira 4.20 = ₱1.00?
2. Convert ₱105,500 into U.S. dollars if the exchange rate is \$1.00 = ₱51.20.
3. How much would Saudi rials 360.20 be in Philippine pesos if the exchange rate is Saudi rials 1.00 = ₱3.42?
4. Convert ₱4,378.00 to Hongkong dollars. The exchange rate is HK \$1.00 = ₱7.20.
5. If the exchange rate is Pounds 1.00 = ₱65.00, how much would 356 Pounds be worth in Philippine pesos?
6. Convert ₱10,450 into U.S. dollars if the exchange rate is \$1.00 = ₱50.25.
7. How much would Saudi Rials 550.50 be in Philippine pesos if the exchange rate is Saudi Rials 1.00 = ₱4.20?

8. If the exchange rate is Pounds 1.00 = ₱66.00, how much would ₱1,600 Pounds be worth in Philippine pesos?

Did you get all answers correct? Compare your answers with those found in the *Answer Key* on page 37. If you got all answers correct, you may proceed to a new lesson on the next page.

You may take a short break before going to Lesson 3. Walk around or sit down and relax. Sit up straight with feet flat on the floor. Inhale and exhale at the count of 6. Do this 120 times. Then turn to the next page.



## Computing Taxes

When a business starts to earn profits, it is the duty of the owner to pay taxes. Taxes are used by the government to build roads, run hospitals, build schools and fund other projects. A good citizen of the country pays his/her taxes honestly and on time. How are these taxes computed? In this lesson, you will study how to compute income taxes using a progressive taxation scheme.



### Let's Read This

#### Computing Taxes

Taxes are collected by the government from earning individuals and businesses. These taxes are used to pay the salaries of government workers, construct roads and provide other basic services. A good citizen of the country pays his/her taxes regularly and honestly.





## Let's Try This

Ask your parents or any working person in your community who pays taxes how he/she paid last year in tax. Find out if they know how these taxes are computed. Also, identify things in your community that are funded by the taxes that working people and business paid.

There are many forms of taxation. Direct taxes are levied (imposed) on people. They are paid directly to the tax-collecting agency of the government, the BIR (Bureau of Internal Revenue). Income, inheritance and residence taxes are examples of direct taxes.

Indirect taxes are levied against goods and services. The people pay for these taxes, too, but not directly. These taxes are already included in the price of goods we buy. Examples of these are sales taxes and duties paid when businesses import goods from other countries.

In this lesson, you will study a form of direct taxation. It applies to income taxes that are computed and paid yearly. This is the progressive tax system.

Do you know what income taxes are? Income taxes are the taxes that people who work or earn pay to the government yearly. In a progressive income tax system, the more you earn, the more taxes you pay. For example, people who earn less than ₱2,500 a year are not required to pay taxes. Those who earn from ₱2,500 to ₱5,000, a year have to pay taxes amounting to 1% of the amount above ₱2,500.

Study the problem below.

If Mang Kanor, a fisherman, earned ₱4,000 in a year. How much tax does he have to pay under the progressive tax system?

According to the tax table used by the people who work with the BIR, he has to pay 1% of the amount above ₱2,500. There is a sample tax table on page 26.

To compute for the tax that he has to pay, you must first determine how much Mang Kanor earned above ₱2,500.

$$₱4,000 - ₱2,500 = ₱1,500$$

Why was this computed? According to the tax table, only yearly income above ₱2,500 are taxable. Read on.

Compute for 1% of ₱1,500

$$₱1,500 \times .01 \text{ (1\% is equal to } 1/100 \text{ or } 0.1) = ₱15$$

Mang Kanor has to pay ₱15 per year in income taxes.





## Let's Think About This

If you were Mang Kanor, would it be easy for you to pay your tax? Why?

Although ₱15 is relatively small to a lot of people, it is could already be a big amount for those who have a very small income. ₱15 out of ₱1,500 could already be a significant amount for Mang Kanor.

How about somebody who earns much more?

Julia works as a salesclerk in a department store. She earns ₱4,000 a month. How much does she have to pay in taxes per year?

To compute for her income tax, find out how much she earns in a year.

$$₱4,000 \times 12 \text{ (for 12 months in a year )} = ₱48,000$$

According to the progressive tax table, earnings over ₱40,000 but not over ₱60,000 must pay a tax base (fixed amount to be paid) of ₱3,075 + 15% of excess over ₱40,000 in taxes. To compute for Julia's income taxes, you must first determine how much Julia earned above ₱40,000.

$$₱48,000 - ₱40,000 = ₱8,000$$

15% of the excess over ₱40,000 is computed as

$$₱8,000 \times .15 \text{ (for 15% since it is equal 15/100 of .15)} = ₱1,200$$

Therefore, Julia must pay ₱3,075 + ₱1,200 in income taxes. How much is her total tax due?

If you computed ₱4,275, you are correct.

Note that for employees receiving monthly salaries, taxes are automatically deducted from their salaries. Usually, the people in the Human Resources Department (HRD) of a company handle this.

How much should be deducted monthly from Julia's salary if her yearly tax due is ₱4,275?

$$\text{Monthly tax due or MTD} = \frac{\text{Year tax due}}{\text{No. of mos. in a year}}$$

$$\text{Monthly tax due} = ₱4,275/12 = ₱356.25$$

The amount of ₱356.25 is automatically deducted from Julia's salary by her company. If her gross income is ₱4,000 a month, how much is her take home pay after taxes are deducted?

Gross income – Monthly tax due = Take home pay

$$₱4,000 - ₱356.25 = ₱3,643.75$$

Julia’s take home pay is ₱3,643.75. This is the amount that she actually receives and “takes home” with her. How much is her take home pay for a year?

$$₱3,643.75 \times 12 \text{ months} = ₱43,725$$

Do you know another way to compute her take home pay in a year?

You could use this formula:

$$\text{Gross Income} - \text{Yearly Tax Due} = \text{Yearly Take Home Pay}$$

$$₱48,000 - ₱4,275 = ₱43,725$$

As mentioned earlier, income taxes follow the progressive tax system. In this system of taxation, the more you earn, the more tax you pay. Study the tax table below. It shows the range of incomes and the corresponding tax due.

Tax Table	
Income	Tax due
Not over ₱2,500	0%
Over ₱2,500 but not over ₱5,000	1% of excess over ₱2,500
Over ₱5,000 but not over ₱10,000	₱25 + 3% of excess over ₱5,000
Over ₱10,000 but not over ₱20,000	₱175 + 7% of excess over ₱10,000
Over ₱20,000 but not over ₱40,000	₱875 + 11% of excess over ₱20,000
Over ₱40,000 but not over ₱60,000	₱3,075 + 15% of excess over ₱40,000
Over ₱60,000 but not over ₱100,000	₱6,075 + 19 % of excess over ₱60,000
Over ₱100,000 but not over ₱250,000	₱13,675 + 24 % of excess over ₱100,000
Over ₱250,000 but not over ₱500,000	₱49,675 + 29 % of excess over ₱250,000
Over ₱500,000	₱122,175 + 35 % of excess over ₱500,000



### Let’s Think About This

You noted that in the progressive tax scheme for income taxes, the more you earn, the more tax you pay. Do you think this system of taxation is fair? Why?



### Let’s Try This

Compute for the yearly tax due based on the progressive tax table above for the following incomes:

1. ₱56,000
2. ₱3,000
3. ₱458,000

4. ₱67,000
5. ₱670,000

Compare your answers with mine on page 37.

Of course, computing for taxes is not easy. There are other things you have to compute for aside from the tax due. You also have to consider tax exemptions, withholding taxes and other items. These are not to be covered in this lesson anymore. You may read the module *Filling Up Forms Accurately* to learn how to fill up Income Tax Return forms.



### Let's Try This

- A. Compute the yearly tax due and the monthly tax due based on the progressive tax table on page 26 for the following incomes:
  1. ₱26,000
  2. ₱78,000
  3. ₱158,000
  
- B. Answer the following questions:
  1. Mang Tinoy is a mechanic. If he earns ₱5,000 a month, how much would he earn in a year not including the 13<sup>th</sup> month pay? How much is his yearly income tax based on the tax table on page 26?
  
  2. If the auto shop where he works automatically deducts his monthly tax due from his salary, how much should this be? How much is his take home pay?

3. Why should Mang Tinoy pay income taxes?

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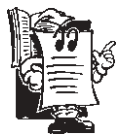
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Compare your answers with those found in the *Answer Key* on page 38. Did you get your answers correct? Find out why some of your answers are wrong and make the necessary corrections before proceeding.



### Let's Remember

- ◆ The government collects taxes from earning individuals and businesses. A good citizen of the country pays his/her taxes regularly and honestly.
- ◆ Direct taxes are levied (imposed) on people and are paid directly to the tax collecting agency of the government.. Indirect taxes are levied against goods and services.
- ◆ In a progressive income tax system, the more you earn, the more tax you pay.
- ◆ The yearly tax due is computed based on a progressive tax table. For employees receiving monthly salaries, taxes (a fraction of the yearly tax due) are automatically deducted from their salaries.



### Let's Sum Up

- ◆ In this module on business math, you learned how to solve business related math problems.
- ◆ In Lesson 1, you studied how to compute for simple and compounded interest and compute for monthly amortization on goods bought on installment.
- ◆ In Lesson 2, you learned how to convert one currency to another.
- ◆ In Lesson 3, you learned how to compute income taxes using a progressive income tax table.



## What Have You Learned?

Congratulations! You are now finished studying this module. By this time you already have the needed knowledge and skills for solving number problems in business. Test what you have learned by answering the following. You may use a separate sheet of paper for your computations.

- A. What is the simple interest on ₱10,000 for 1 year at 5% interest per year?
- B. What is the compounded interest on the same amount and term if the interest is compounded quarterly?
- C. What is the monthly amortization for a refrigerator bought by installment if the unit costs ₱8,600 if paid in cash? The appliance store has a surcharge of 20% a year for purchases on installment basis. The term the customer chose is 4 months.
- D. Currency Conversion
1. Convert ₱5,400 into U.S. dollars if the exchange rate is  $\$1.00 = ₱50.25$ .

2. How much would Saudi rials 600 be in Philippine pesos if the exchange rate is Saudi rials 1.00 = ₱4.20?
- E. Compute the yearly tax due and the monthly tax due based on the progressive tax table on page 26 for the following incomes:
1. ₱1,000
  
  
  
  
  
  
  
  
  
  
  2. ₱47,000
  
  
  
  
  
  
  
  
  
  
  3. ₱158,000

Compare your answers with those found in the *Answer Key* on pages 39–40. Are your answers correct? If they are, that’s very good.

I hope you learned a lot from this module. If you did, congratulations for a job well done! If you already got your answers correct, study the module summary below.



## Answer Key

### A. Let's See What You Already Know (page 2)

A. Interest to pay on the 6<sup>th</sup> month:

$$I = PRT$$

$$I = \text{₱}10,000 \times .05 \times 6/12$$

$$I = \text{₱}250$$

Total amount to be paid on the 6<sup>th</sup> month:

$$A = P + I$$

$$A = \text{₱}10,000 + \text{₱}250$$

$$A = \text{₱}10,250$$

B. Since 6 months is composed of 2 quarters (3 months  $\times$  2 = 6), the compounded interest must be computed up to the second quarter.

Compounded Interest to pay on the 6<sup>th</sup> month:

$$I = PRT$$

$$\text{First Quarter} \quad I = \text{₱}10,000 \times .05 \times 1/4$$

$$I = \text{₱}125$$

$$\text{New Balance} \quad (A=P+I) = \text{₱}10,000 + \text{₱}125 = \text{₱}10,125$$

$$\text{Second Quarter} \quad I = \text{₱}10,125 \times .05 \times 1/4$$

$$I = \text{₱}126.56$$

Total amount to be paid on the 6<sup>th</sup> month:

$$\text{New Balance} = \text{₱}10,125 + \text{₱}126.56 = \text{₱}10,251.56$$

C.  $I = PRT$

$$\text{First Quarter} \quad I = \text{₱}20,000 \times .10 \times 6/12$$

$$I = \text{₱}1000$$

$$I = \text{₱}1000/4 \text{ quarters in a year} = \text{₱}250$$

$$\text{New Balance} \quad (A=P+I) = \text{₱}20,000 + \text{₱}250 = \text{₱}20,250$$

$$\text{Second Quarter} \quad I = \text{₱}250 \text{ (the same amount as the previous quarter is paid since the interest is compounded every 6 months, not quarterly.)}$$

$$\text{New Balance} \quad (A=P+I) = \text{₱}20,250 + \text{₱}250 = \text{₱}20,500$$

Third Quarter  $I = ₱20,500 \times .10 \times 6/12$   
 $I = ₱1,025 / 4$  quarters in a year = ₱256.25  
 New Balance  $(A=P+I) = ₱20,500 + ₱256.25 = ₱20,756.25$   
 Fourth Quarter ₱256.25 ( same interest)  
 New Balance  $(A=P+I) I = ₱20,756.25 + ₱256.25 = ₱21,012.45$   
 Total amount to be paid at the end of the term: ₱21,012.45

C.  $₱2,500 / ₱50.20 = \text{U.S.}\$49.80$

Payment in dollars: U.S.\$49.80

D. For earnings over ₱40,000 but not over ₱60,000 a year, ₱3,075 + 15% in excess of ₱40,000 in income taxes must be paid.

$₱50,000 - ₱40,000 = ₱10,000 \times .15 = ₱1,500$

Tax Due for the year:  $₱3,075 + ₱1,500 = ₱4,575$

## B. Lesson 1

*Let's Try This (page 7)*

### Problem # 1:

Simple Interest in 3 years:

$$I = PRT$$

$$I = ₱5,000 \times .06 \times 3 \quad I = ₱900$$

Total amount to be paid at the end of the term:

$$A = P + I$$

$$A = ₱5,000 + ₱900$$

$$A = ₱5,900$$

### Problem # 2:

Simple Interest for 5 months:

$$I = PRT$$

$$I = ₱2,500 \times .10 \times 5/12$$

$$I = ₱104.17$$

Total amount to be paid at the end of the term:

$$A = P + I$$

$$A = ₱2,500 + ₱104.17$$

$$A = ₱2,604.17$$



*Let's Try This (page 12)*

**Problem # 1:**

$$I = PRT$$

$$\text{First Quarter} \quad I = \text{P}3,400 \times .06 \times 3/12$$

$$I = \text{P}51$$

$$\text{New Balance} \quad (A=P+I) = \text{P}3,400 + \text{P}51 = \text{P}3,451$$

$$\text{Second Quarter} \quad I = \text{P}3,451 \times .06 \times 3/12$$

$$I = \text{P}51.77$$

$$\text{New Balance} \quad (A=P+I) = \text{P}3,451 + \text{P}51.77 = \text{P}3,502.77$$

$$\text{Third Quarter} \quad I = \text{P}3,502.77 \times .06 \times 3/12$$

$$I = \text{P}52.54$$

$$\text{New Balance} \quad (A=P+I) = \text{P}3,502.77 + \text{P}52.54 = \text{P}3,555.31$$

$$\text{Fourth Quarter} \quad I = \text{P}3,555.31 \times .06 \times 3/12$$

$$I = \text{P}533.30$$

$$\text{New Balance} \quad (A=P+I) I = \text{P}3,555.31 + \text{P}533.30 = \text{P}3,608.64$$

Quarter	Interest	New Balance
Fifth	P54.13	P3662.77
Sixth	P54.94	P3717.71
Seventh	P55.77	P3773.48
Eight	P56.60	P3830.08

At 2 years ( 8 quarters ), interest is:

$$\text{P}3830.08 - \text{P}3,400 = \text{P}430.08$$

Total amount to be paid at the end of the term: P3,830.08

**Problem # 2:**

$$I = PRT$$

First Quarter	$I = \text{₱}2,500 \times .05 \times 3/12$
---------------	--

$$I = \text{₱}31.25$$

New Balance	$(A=P+I) = \text{₱}2,500 + \text{₱}31.25 = \text{₱}2,531.25$
-------------	--

Second Quarter	$I = \text{₱}2,531.25 \times .05 \times 3/12$
----------------	---

$$I = \text{₱}31.64$$

New Balance	$(A=P+I) = \text{₱}2,531.25 + \text{₱}31.64 = \text{₱}2,562.89$
-------------	---

Third Quarter	$I = \text{₱}2,562.89 \times .05 \times 3/12$
---------------	---

$$I = \text{₱}32.04$$

New Balance	$(A=P+I) = \text{₱}2,562.89 + \text{₱}32.04 = \text{₱}2,626.97$
-------------	---

Fourth Quarter	$I = \text{₱}2,626.97 \times .05 \times 3/12$
----------------	---

$$I = \text{₱}32.84$$

New Balance (A=P+I)	$I = \text{₱}2,626.97 + \text{₱}32.84 = \text{₱}2,657.72$
---------------------	---

Total compounded interest paid for a year:  $\text{₱}2,657.72 - \text{₱}2,500 = \text{₱}159.73$

Total amount to be returned to the bank:  $\text{₱}2,657.72$

*Let's Try This (page 15)*

**Problem # 1:**

$$I = PRT$$

$$P = \text{₱}9,500$$

$$R = .30 \text{ (this means 20\%)}$$

$$T = 12/12 \text{ or } 1$$

$$I = \text{₱}9,500 \times .30 \times 1$$

$$I = \text{₱}2,850 \text{ ( interest in a year)}$$

Total amount to be paid:

$$A = P+I \quad A = \text{₱}9,500 + \text{₱}2,850$$

$$A = \text{₱}12,350$$

Monthly Amortization for 8 months:  $M = A / N$

$$M = \text{₱}12,350 / 8 \text{ months}$$

$$M = \text{₱}1,543.75 \text{ per month}$$

**Problem # 2:**

$$I = PRT \quad P = \text{₱}11,700$$

$$R = .25 \text{ (this means 25\%)}$$

$$T = 12/12 \text{ or } 1$$

$$I = \text{₱}11,700 \times .25 \times 1$$

$$I = \text{₱}2,925 \text{ (interest in a year)}$$

Total amount to be paid:

$$A = P + I \quad A = \text{₱}11,700 + \text{₱}2,925$$

$$A = \text{₱}14,625$$

Monthly Amortization for 8 months:  $M = A / N$

$$M = \text{₱}14,625 / 6 \text{ months}$$

$$M = \text{₱}2,437.50 \text{ per month}$$

*Let's Try This (page 16)*

A. Simple Interest for 1 year:

$$I = PRT$$

$$I = \text{₱}16,000 \times .04 \times 1$$

$$I = \text{₱}640.00$$

For 5 years :  $\text{₱}640.00 \times 5 = \text{₱}3,200$

Total amount to be paid at the end of the term:

$$A = P + I$$

$$A = \text{₱}16,000 + \text{₱}3,200$$

$$A = \text{₱}19,200$$

B. Compounded Interest

$$I = PRT$$

First Quarter	$I = \text{₱}6,500 \times .06 \times 3/12$
	$I = \text{₱}97.50$

New Balance	$(A=P+I) = \text{₱}6,500 + \text{₱}97.50 = \text{₱}6,597.50$
-------------	--

Second Quarter	$I = \text{₱}6,597.50 \times .06 \times 3/12$
	$I = \text{₱}98.96$

New Balance	$(A=P+I) = \text{₱}6,597.50 + \text{₱}98.96 = \text{₱}6,696.46$
-------------	---

Third Quarter	$I = \text{₱}6,696.46 \times .06 \times 3/12$
	$I = \text{₱}100.45$

New Balance	$(A=P+I) = \text{₱}6,696.46 + \text{₱}100.45 = \text{₱}6,796.91$
-------------	--

Fourth Quarter  $I = ₱6,796.91 \times .06 \times 3/12$

$$I = ₱101.95$$

New Balance  $(A=P+I) I = ₱6,796.91 + ₱101.95 = ₱6,898.86$

Total compounded interest paid for a year:

$$₱6,898.86 - ₱6,500 = ₱398.86$$

Total amount to be returned to the bank:

$$₱6,898.86$$

Monthly Amortization

$$I = PRT \quad P = ₱2,600$$

$$R = .24 \text{ (this means 24\%)}$$

$$T = 12/12 \text{ or } 1$$

$$I = ₱2,600 \times .24 \times 1$$

$$I = ₱650 \text{ (interest in a year)}$$

Total amount to be paid:

$$A = P+I \quad A = ₱2,600 + ₱650$$

$$A = ₱3,250$$

Monthly Amortization for 6 months:  $M = A / N$

$$M = ₱3,250 / 6 \text{ months}$$

$$M = ₱541.67 \text{ per month}$$

### C. Lesson 2

*Let's Try This (page 18)*

1. e
2. f
3. g
4. b
5. I
6. h
7. a
8. d
9. c
10. j

*Let's Try This (page 21–22)*

1. Lira 150,000 / ₱4.20 = ₱35,714.28
2. ₱105,500 / ₱51.20 = U.S.\$2,060.55
3. Saudi rials 360.20 × ₱3.42 = ₱1,231.89
4. ₱4,378.00/ ₱7.20 = Hongkong \$608.06
5. Pounds 356 × ₱65.00 = ₱23,140
6. ₱10,450 / ₱50.25 = U.S.\$207.96
7. Saudi rials 550.50 × ₱4.20 = ₱2,312,10
8. Pounds 1,600 Pounds × ₱66.00= ₱105,600

#### **D. Lesson 3**

*Let's Try This (pages 26–27)*

1. ₱56,000  
Over ₱40,000 but not over ₱60,000 is ₱3,075 + 15% of excess over ₱40,000  
$$\text{₱}56,000 - \text{₱}40,000 = \text{₱}16,000 \times .15 = \text{₱}2,400$$
$$\text{₱}3,075 + \text{₱}2,400 = \text{₱}5,475.00$$
2. ₱3,000  
Over ₱2,500 but not over ₱5,000 is 1% of excess over ₱2,500  
$$\text{₱}500 \times .01 = \text{₱}5.00$$
3. ₱458,000  
Over ₱250,000 but not over ₱500,000 is ₱49,675 + 29 % of excess over ₱250,000  
$$\text{₱}458,000 - \text{₱}250,000 = \text{₱}208,000 \times .29 = \text{₱}60,320$$
$$\text{₱}49,675 + \text{₱}60,320 = \text{₱}109,995$$
4. ₱67,000  
Over ₱60,000 but not over ₱100,000 is ₱6,075 + 19 % of excess over ₱60,000  
$$\text{₱}67,000 - \text{₱}60,000 = \text{₱}7,000 \times .19 = \text{₱}1,330$$
$$\text{₱}6,075 + \text{₱}1,330 = \text{₱}7,405$$
5. ₱670,000  
Over ₱500,000 is 122,175 + 35 % of excess over ₱500,000  
$$\text{₱}670,000 - \text{₱}500,000 = \text{₱}170,000 \times .35 = \text{₱}59,500$$
$$\text{₱}122,175 + \text{₱}59,500 = \text{₱}181,675$$

Try This (pages 27–28)

- A. 1. ₱26,000  
Over ₱20,000 but not over ₱40,000 is ₱875 + 11% of excess over ₱20,000  
 $₱26,000 - ₱20,000 = ₱6,000 \times .11 = ₱660$   
 $₱875 + ₱660 = ₱1,535$
2. ₱78,000  
Over ₱60,000 but not over ₱100,000 is ₱6,075 + 19 % of excess over ₱60,000  
 $₱78,000 - ₱60,000 = ₱18,000 \times .19 = ₱3,420$   
 $₱6,075 + ₱3,420 = ₱9,495$
3. ₱158,000  
Over ₱100,000 but not over ₱250,000 is ₱13,675 + 24 % of excess over ₱100,000  
 $₱158,000 - ₱100,000 = ₱58,000 \times .24 = ₱13,920$   
 $₱13,675 + ₱13,920 = ₱27,595$
- B. 1. Yearly income = Monthly income  $\times$  12  
 $₱5,000 \times 12 = ₱60,000$   
Income Tax to be paid according to the progressive income tax table  
(For incomes over ₱40,000 but not over ₱60,000, one should pay ₱3,075 + 15 % of excess over ₱40,000)  
 $₱60,000 - ₱40,000 = ₱20,000 \times .15 = ₱3,000$   
 $₱3,075 + ₱3,000 = ₱6,075$
2. Monthly Deduction = Tax Due/12 =  $₱6,075/12 = ₱506.25$   
Monthly Take Home Pay = Monthly Gross Income – Monthly Tax Due  
 $₱5,000 - ₱506.25 = ₱4,493.75$  a month  
Yearly Take Home Pay = Yearly Gross Income – Year Tax Due  
 $₱60,000 - ₱6,075 = ₱53,925$  a year
3. Mang Tinoy should pay his income taxes because it is his duty as a citizen of the country and it is required by law. Taxes are used by the government to pay the salaries of government workers, and build roads and other public utilities (infrastructure projects).

**E. What Have You Learned?** (page 29–30)

- A. What is the simple interest on ₱10,000 for 1 year at 5% interest per year?

$$I = PRT$$

$$I = ₱10,000 \times .05 \times 1$$

$$I = ₱500$$

- B. What is the compounded interest on the same amount and term if the interest is compounded quarterly?

$$I = PRT$$

First Quarter  $I = ₱10,000 \times .05 \times 4/12$

$$I = ₱125$$

New Balance  $(A=P+I) = ₱10,000 + ₱125 = ₱10,125$

Second Quarter  $I = ₱10,125 \times .05 \times 1/4$

$$I = ₱126.56$$

New Balance  $(A=P+I) = ₱10,125 + ₱126.56 = ₱10,251.56$

Third Quarter  $I = ₱10,251.56 \times .05 \times 4/12$

$$I = ₱128.14$$

New Balance  $(A=P+I) = ₱10,251.56 + ₱128.14 = ₱10,379.70$

Fourth Quarter  $I = ₱10,379.70 \times .05 \times 4/12$

$$I = ₱129.75$$

New Balance  $(A=P+I) = ₱10,379.70 + ₱129.75 = ₱10,509.45$

$$₱10,509.45 - ₱10,000 = ₱509.45$$

Total compounded interest in a year: ₱509.45

- C. Monthly Amortization

$$I = PRT \quad P = ₱8,000$$

$$R = .20 \text{ (this means 24\%)}$$

$$T = 12/12 \text{ or } 1$$

$$I = ₱8,000 \times .20 \times 1$$

$$I = ₱1,600 \text{ (interest in a year)}$$

Total amount to be paid:

$$A = P+I \quad A = ₱8,000 + ₱1,600$$

$$A = ₱9,600$$

Monthly Amortization for 4 months:  $M = A / N$

$$M = \text{₱}9,600 / 4 \text{ months}$$

$$M = \text{₱}2,400 \text{ per month}$$

D. Currency Conversion

1.  $\text{₱}5,400 / \text{₱}50.25 = \text{U.S.}\$107.46$

2. Saudi Rials  $600 \times \text{₱}4.20 = \text{₱}2,520$

E. Taxes

1.  $\text{₱}1,000$

Not over  $\text{₱}2,500$  is 0%

No taxes are to be paid for year earnings less than  $\text{₱}2,500$ .

2.  $\text{₱}47,000$

Over  $\text{₱}40,000$  but not over  $\text{₱}60,000$  is  $\text{₱}3,075 + 15\%$  of excess over  $\text{₱}40,000$

$$\text{₱}47,000 - \text{₱}40,000 = \text{₱}7,000 \times .15 = \text{₱}1,050$$

$$\text{₱}3,075 + \text{₱}1,050 = \text{₱}4,125$$

3.  $\text{₱}158,000$

Over  $\text{₱}100,000$  but not over  $\text{₱}250,000$  is  $\text{₱}13,675 + 24\%$  of excess over  $\text{₱}100,000$

$$\text{₱}158,000 - \text{₱}100,000 = \text{₱}58,000 \times .24 = \text{₱}13,920$$

$$\text{₱}13,675 + \text{₱}13,920 = \text{₱}27,595$$



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