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11

Business Mathematics

Quarter 1– Module 2

Business Applications of Fractions, Decimals, and Percents

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SMILE

SUPPORT MATERIAL FOR INDEPENDENT LEARNING ENGAGEMENT (SMILE)

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Business Mathematics–Grade 11
Support Material for Independent Learning Engagement (SMILE)
Quarter 1 – Module 2: Business Applications of Fractions, Decimals, and Percents
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Preface

Dear Boys and Girls,

This Business Mathematics module was written in response to the world health pandemic in order to continue schooling in a safe way at home. You will learn how to solve problems involving fractions that you will meet in your daily life activities.

Every lesson is presented through a problem situation where you will find the need to learn a particular skill.

Varied practices are found in this module to help you master the number skills needed to be good problem solver. There is a test at the end of every lesson to let you know how you will have learned the concept, facts, and skills develop in the lesson.

This module has the following parts that you need to understand such as:



What I need to know

In this part, it contains learning objectives to be developed in a material. It introduces the topic/content of the module briefly.



What I know

In this 10 test item, we will see how much you know in this module. If you get a perfect score (100%), you can skip the next parts of this module and proceed to the next one.



What's In

It connects the current lesson with the previous lesson by going over concepts that were learned previously.



What's New

In this part new lesson is introduced through a story, a poem, song, situation or an activity.



What is it

In this section, you are given a short discussion about the topic. It aims to help you understand the new concept and skills.



What's More

It has activities to strengthen the understanding and skills about the topic.



What I have Learned

This part may contain a question, fill in the blank sentence/paragraph to process what the learner learned from the lesson.



What I can Do

An activity that shall transfer the skills/knowledge gained or learned into real life concerns/situations.



Assessment

A 10 item test is given to measure the knowledge earned in the lesson being introduced.



Additional Activities

In this part, more activities are given to improve/enhance the learning and understanding in the topic.



Answer Key

It contains answer to all activities in the material.

In the last part of this module, you can also see the:

References

It is the list of all sources in developing the material.

Learning Business Mathematics is fun. It is not as difficult as you think. I hope that this module can help you explore the world of mathematical concept in relation to your everyday life.

The Author



What I Need to Know

In this module you will learn to apply the practical knowledge of fractions, decimals, and percent in solving business problems.

At the end of this module, you are expected to:

- a. Give real-life situations to illustrate fractions, decimals, and percent;
- b. Solve problems involving fractions, decimals, and percent;



What I know?

1. Every passenger in any domestic flight of an airline is allowed 20 kilograms of luggage for free. However, the excess baggage costs Php 200 per kilogram. If a person has 26.3 kilograms of luggage, how much extra will this person pay?
2. In a certain barangay, the 2010 population was 4,780. In 2014, the population increased to 6,755. Find the percent of increase in the population.
3. A woman deposits Php 23,200 into her account. How much would the annual interest be if its interest rate is $6\frac{1}{2}\%$?
4. Julia made ribbons for her school's Foundation Day presentation. Her roll of ribbon is 35 meters long. For each individual ribbon, she needs 0.235 meter. How many ribbons could she make from her roll?
5. A tablet's price was reduced from Php 25,000 to Php 19,500. Find the percent reduction in price.
6. A sari-sari store saved Php 200,500 last year. If this represents 12% of its annual income, how much was its income last year?
7. A 12% VAT is added to all items bought from all business establishments like supermarkets, drugstores, restaurants, etc. If an item costs Php 125.00 before the tax is added, how much will a customer pay for the item?
8. Jessica bought a pair of rubber shoes that costs Php 3,000. She got 45% discount. How much did she pay for it?
9. Rina earns Php 168,000.00 a year. If 15% of her income goes to taxes, how much of her income goes to taxes?
10. In a high school, 25% of the faculty teaches Math. If there are 25 Math Teachers, how many teachers are there in the school?

Lesson**1****Business Applications of Fractions, Decimals, and Percents****What's In**

- How to express fractions to Decimal and Percent forms?

- How to express decimals to fractions and percent forms?

- How to express percent to fractions and decimal forms?

**What's New**

- Juanita sells different types of cloth. She cuts a bolt of cloth containing 100 yards into single-pants cut of $1\frac{1}{4}$ yards each.
 - a. Into how many pieces was the blot cut?
 - b. If Juanita sells the cloth at Php 150.00 per cut, how much will the entire bolt sell?
 - c. If Juanita bought the bolt at Php 90.00 per yard, how much gross profit will she earn?

**What is it**

In computing business transactions, most of the time we convert fraction to decimal, fraction to percent, decimal to fraction, or percent to fraction. For example, if the net profit of a partnership is Php 40,000.00 and you, as a partner, share 25% in said profit, it would be easier to

change the 25% to a fraction because 25% is $\frac{1}{4}$ and $\frac{1}{4}$ of Php 40,000.00 is Php 10,000.00. It is easier to divide the Php 40,000.00 by 4 (multiply it by $\frac{1}{4}$) than multiply it by 25% or $\frac{25}{100}$ or 0.25.

Now that you are aware of fractions is important in solving business problems. In this section you will solve more problems that involves business transactions.

Example 1

A corporation is authorized to issue 10,000 Php 100-par value stocks. If the law prescribes that 25% of the authorized is to be subscribed and 25% of the subscribed should be paid up:

How much should be subscribed?

$$\begin{aligned} \text{Solution: } 10,000 \times \text{Php } 100\text{-par value} &= \text{Php } 1,000,000.00 \times 25\% \\ &= \text{Php } 250,000.00 \end{aligned}$$

How much should be paid-up?

$$\begin{aligned} \text{Solution: } 10,000 \times \text{Php } 100\text{-par value} &= \text{Php } 1,000,000.00 \times 25\% \\ &= \text{Php } 250,000.00 \end{aligned}$$

There are various applications of fractions in business. The following examples are not all inclusive. There are still a lot more, but the following are deemed more than enough to give the business students an idea of the practical uses of fractions in business.

Example 2

Lilia owns three parcels of land of $12\frac{1}{5}$, $8\frac{2}{3}$, and $15\frac{3}{4}$ hectares. If she sells a total of $18\frac{1}{2}$ hectares, how many hectares will be left?

$$\begin{aligned} \text{Solution: } &= [12\frac{1}{5} + 8\frac{2}{3} + 15\frac{3}{4}] - 18\frac{1}{2} \\ &= (12 + 8 + 15) + [\frac{1}{5} + \frac{2}{3} + \frac{3}{4}] - 18\frac{1}{2} \\ &= 35 + \frac{97}{60} - 18\frac{1}{2} = 35 + 1\frac{37}{60} - 18\frac{1}{2} \\ &= 36 + \frac{37}{60} - 18\frac{1}{2} = 36\frac{37}{60} - 18\frac{30}{60} \end{aligned}$$

$$= (36 - 18) + \frac{37}{60} - \frac{30}{60} = 18 + \frac{7}{60} = \mathbf{18\frac{7}{60}}$$
 hectares

Example 3

A carpenter finish a stool in $1\frac{1}{4}$ hours. If he works 8 hours a day, 5 days a week, how many stools can he finish in a week's time?

Solution:

$$\begin{aligned} &= \frac{8 \text{ hours a day}}{1\frac{1}{4} \text{ hours/stool}} = \frac{8}{\frac{5}{4}} \\ &= 8 \times \frac{4}{5} = \frac{32}{5} \text{ stools/day} \\ &= \frac{32}{5} \times 5 = \mathbf{32 \text{ stools/week}} \end{aligned}$$

OR

$$8 \text{ hours/day} \times 5 \text{ days/week} = 40 \text{ hours/week}$$

$$\frac{40 \text{ hours/week}}{1\frac{1}{4} \text{ hours/stool}} = \frac{40 \text{ hours/week}}{\frac{5}{4} \text{ hours/stool}}$$

$$= \frac{40 \text{ hours}}{5 \text{ hours}} \times 4 \text{ stools/week}$$

$$= \frac{160}{5} \text{ stools/week}$$

$$= \mathbf{32 \text{ stools/week}}$$



What's More

ACTIVITY 1

1. Aaron, Bonzerr, and Christian wan to form a partnership. They need a total capital of Php 75,000. They agreed to contribute $\frac{1}{5}$ (Aaron), $\frac{1}{4}$ (Bonzerr), and $\frac{11}{20}$ (Christian) of their capital to the partnership. How much will each contribute?

a. Aaron = Php _____

b. Bonzerr = Php _____

c. Christian = Php _____

ACTIVITY 2

1. The partnership of Nina, Sarah, and Tessa earned a net income of Php 30,000.00 they agreed to divide profits and losses: $\frac{1}{2}$ to Nina, $\frac{1}{3}$ to Sarah, and the rest to Tessa.

a. What fractional part is Tessa's share? _____

b. Compute the share of each in the net income.

b.1 Nina = Php _____

b.2 Sarah = Php _____

b.3 Tessa = Php _____

ACTIVITY 3

1. You were given the following capital balances of the partners of the Pinnacle Trading:

Pablo Php 10,000.00

Norman Php 20,000.00

Christian Php 30,000.00

The partners agreed to divide profit or loss in the ratio of their capital balances. If the partnership earned a profit of Php 30,000.00 for the year, compute the share of Pablo, Norman, and Christian to the profit of the business.

a. Share of Profit for Pablo = Php _____

b. Share of Profit for Norman = Php _____

c. Share of Profit for Christian = Php _____



What I have Learned

What have you learn from the session?



What I can Do

ACTIVITY 4

Give real life situations (base on your experience) that illustrate fractions, decimals, and percent.

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PERFORMANCE	SCORE
Real life situations to illustrate fractions, decimals, and percent is clearly evident	5
Real life situations to illustrate fractions, decimals, and percent is evident	4
Real life situations to illustrate fractions, decimals, and percent is in progress	3
Attempt was made but failed to continue.	2
No attempt.	0



Assessment

1-3 Mercy earns a monthly salary of Php 6,200.00. She spends $\frac{1}{4}$ for food, $\frac{1}{8}$ for clothing, $\frac{2}{5}$ for education, and $\frac{1}{10}$ for recreation. She saves the rest.

1. Compute the amount she spends for each item and her total expenses.
2. How much does she save each month?
3. What fractional part of her salary is her savings?

4-6 A Senior High School has 5,000 students enrolled for academic year 2019-2020. Of these, 1,200 are majoring STEM, 1,500 are ABM, 700 are HUMSS, and the remaining are GAS.

4. What percent of the enrollees take HUMSS?
5. What percent has chosen as a major which is not HUMSS or ABM?
6. What percent are enrolled to GAS?

7. Every passenger in any domestic flight of an airline is allowed 20 kilograms of luggage for free. However, the excess baggage costs Php 200 per kilogram. If a person has 26.3 kilograms of luggage, how much extra will this person pay?

8. In a certain barangay, the 2010 population was 4,780. In 2014, the population increased to 6,755. Find the percent of increase in the population.

9. A woman deposits Php 23,200 into her account. How much would the annual interest be if its interest rate is $6\frac{1}{2}\%$?

10. Julia made ribbons for her school's Foundation Day presentation. Her roll of ribbon is 35 meters long. For each individual ribbon, she needs 0.235 meter. How many ribbons could she make from her roll?



Additional Activities

- Senior Citizens have a 20% discount in food establishments. If Norma, a 72-year-old mother, has a receipt that amounts to Php 645.80, How much is the original bill? Explain your answer.

PERFORMANCE	SCORE
Problem was completely solved and explained.	5
Problem was halfway solved but calculation occurred and explained.	4
Solving progress was evident.	3
Attempt was made but failed to continue.	2
No attempt.	0

Summary

- Fraction, Decimals, and Percent are common in doing business transactions.
- In computing business transactions, most of the time we convert fraction to decimal, fraction to percent, decimal to fraction, or percent to fraction.



Answer Key

Php 645.80 is 80% of the total amount since it has a 20% discount. Therefore, $\text{Php } 645 \div 80\% = \text{Php } 807.25$ is the original bill.

Additional Activities

10. 148 ribbons
 9. Php 1,508.00
 8. 41.32%
 7. Php 1,260.00
 6. 32%
 5. 56%
 4. 14%
 3. $\frac{1}{8}$
 2. Php 775.00
- Recreation- Php 620, Total Expenses- Php 5,425
1. Food- Php 1,550, Clothing- Php 775, Education- Php 2,480

Assessment

Activity 4- Based on Rubric

<p>Activity 1</p> <p>a. Php 15,000.00</p> <p>b. Php 18,750.00</p> <p>c. Php 41,250.00</p>	<p>Activity 2</p> <p>a. $\frac{6}{1}$</p> <p>b. 1 Php 15,000.00</p> <p>b. 2 Php 10,000.00</p> <p>b. 3 Php 5,000.00</p>	<p>Activity 3</p> <p>a. Php 5,000.00</p> <p>b. Php 10,000.00</p> <p>c. Php 15,000.00</p>
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- What I Know**
1. Php 1,260.00
 2. 41.32%
 3. Php 1,508.00
 4. 148 ribbons
 5. 22%
 6. Php 1,670,833.33
 7. Php 140.00
 8. Php 1,650.00
 9. Php 25,200.00
 10. 100 teachers

References:

- Business Math Textbook
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