



Mathematics

Quarter 3 – Module 4: **Finding the Percentage of a** Number



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Mathematics

Quarter 3 – Module 4: Finding the Percentage of a Number



Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-bystep as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.



What I Need to Know

Good day, Mathletes! In this module, you are going to learn how to find the percentage of a number. This lesson will enrich your knowledge and skills in doing the basic operations with numbers and in changing percent to decimal or fraction and vice-versa. These skills will help you solve real-life concerns such as budgeting your daily expenses and managing your money efficiently. Challenging activities are also provided to strengthen your understanding of the lesson.

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

- find the percentage of a given problem;
- solve problems using real life situation involving percentage of a number; and
- appreciate the idea of using percentage of a number in solving word problems.

Are you ready to explore the lesson? Let us check what you know about finding the percentage of a number



What I Know

Directions: Read and understand the given. Choose the letter that corresponds to the correct answer. Write your answers and show your solutions on a separate sheet of paper.

- 1) What is 10% of 150?
 - a. 10
 - b. 15
 - c. 25
 - d. 50
- 2) Which of the following is equal to 50% of P200?
 - a. 20
 - b. P 50
 - c. P 100
 - d. P 250
- 3) Which of the following is the 20% of 120?
 - a. 2.4
 - b. 20
 - c. 24
 - d. 140
- 4) Reymar bought P2000 worth of tinapa, which was sold at 10% discount. How much did he pay?
 - a. P 200
 - b. P 1800
 - c. P 1980
 - d. P 2200
- 5) The Math Division Competition for Grade 5 had 150 participants. The top 10% of the participants qualified for the regional level. How many qualified for the regional level?
 - a. 26
 - b. 20
 - c. 16
 - d. 10

- 6) If 75% of the pupils in a class of 40 passed the math quiz, how many of them failed?
 - a. 10
 - b. 15
 - c. 20
 - d. 30
- 7) Metro Central in Calbayog City gives a special promo discount on selected items. Jayson buys a shirt with a tag price of P350. It is offered with 40% discount. Which of the following is the new price of the shirt?
 - a. P 140
 - b. P 210
 - c. P 310
 - d. P 390
- 8) A school canteen is selling special lunch for P50 with 10% discount for students. If Ann, Kc, Angel, Shamcey and Enrique each get the offer, how much is the total cost of their lunch?
 - a. P 150
 - b. P 180
 - c. P 200
 - d. P 225
- 9) Alfred delivers turon to the canteen every day. The canteen sells each turon for Php 10. The canteen gives him 10% of the sales as commission. How much will his commission be on a day when the canteen sells 50 turons?
 - a. P 30
 - b. P 40
 - c. P 50
 - d. P 60
- 10)Forty-five percent of 40 pupils were boys. Suppose 50% of the girls left, what was the new ratio of the number of girls to the number of boys?
 - a. 22:18
 - b. 18:11
 - c. 18:22
 - d. 11:18

Compare your answers with the Answer Key at the end of this module. If you got 100% correct answers, you may go to the next module. Otherwise, go to the next page to gain more understanding about rate, base and percentage! Let's go!

Lesson Finding the Percentage of a Number

To find the percentage of a number, you need to define and identify the base, percentage and rate in a problem. You also need to comprehend the information given in the problem and identify what is being asked. In this module, you will learn how to find the percentage of a number. Are you ready now? So, let's proceed.



Let us go back a little bit and refresh your memory. Can you still remember the steps in identifying the base, percentage and rate in a problem?

Percentages are like fractions and decimals. They can be used to describe what proportion of a whole is represented by a number. Percentage is a term from a Latin word which means "out of one hundred". We can consider percentage is a part of a whole. That whole or total is the base. The number with the percent (%) symbol is the rate. For example,



Now, consider the word problem that follows. Identify the rate, percentage, and base.



What's New

From the previous lesson, you were taught how to identify the percentage, rate and base in a problem. In this module you will learn how to find the percentage of a number.

Recall that **percentage** can be viewed as part of a whole. It can be used as a proportion or share of a bigger amount or in relation to a whole. The whole is the **base**. The **percent or rate** is a rating in which one number is compared to 100. It means per hundred. It usually comes with a percent sign (%) in a problem. It can easily be changed to decimal by dividing the number by 100 or by simply moving the decimal point two places to the left.

Consider the problem below:

The Gomez Family has 5 members. Mrs. Gomez prepares a weekly budget to make sure that there is money for their needs and expenses. The pie graph below shows the family's weekly budget. How much of the family's P 2 000 weekly income goes to food? School supplies? Savings? Fare?

Family Budget for P 2 000







Percentage is widely used in many different aspects in our lives every day. It is important for understanding the financial matters in our everyday life. Thus, it is important for you to master the skills in finding percentages of a number.

Remember that **percentage** can be viewed as *part of a whole*. That *whole or total* is the **base**. The number with *percent* (%) *symbol* is the **rate**.

Let's consider the earlier problem.

To compute for the actual amounts, we list down the different items and their corresponding allotment of budget. Let us now solve for the percentage of each item in the pie graph

Budget	Percentage	Amount
Food	50% of P 2 000 =	?
School Supplies	25% of P 2 000 =	?
Fare	15% of P 2 000 =	?
Savings	10% of P 2 000 =	?

Solution:

You may rename the rate as a decimal or as a fraction to compute for the actual amounts.

a.	0.50 x 2000 =	or	$\frac{50}{100} \times \frac{2000}{1} = 1\ 000$
b.	0.25 x 2000 =	or	$\frac{25}{100} \times \frac{2000}{1} = 500$
c.	0.15 x 2000 =	or	$\frac{15}{100} \times \frac{2000}{1} = 300$
d.	0.10 x 2000 =	or	$\frac{10}{100} \times \frac{2000}{1} = 200$

The problem can also be solved by using a bar model as shown below.



We see that the following values are correct as computed earlier.

Budget	Percentage	Amount
Food	50% of 2000 =	P1 000
School Supplies	25 % of 2000 =	P 500
Fare	15% of 2000 =	P 300
Savings	10% of 2000 =	P 200

Therefore, the following is the allocation for the Php 2 000: Php1 000 is for food. Php 500 is for school supplies, Php 300 is for fare; and Php 200 is for savings.

Notice that the family is saving money for future use.

Do you also save money for rainy days? Why or why not?

Let us now proceed to another example.

Example 2



Means of Students in Going to School

The pie chart shows the different means of students to go to school. If there were 2,500 students surveyed, how many pupils took the bus? the tricycle? the taxi? the jeepney? How many students walk to school?

Solution: (those who took the bus)

To find 40% of 2500, change the percent to a fraction or to a decimal, then multiply it by the number.

Method 1 Let us express percent as a fraction,

$$40\% = \frac{40}{100} = \frac{2}{5} \text{ then,}$$
$$\frac{2}{5} \ge \frac{2500}{1} = 1000$$

Method 2 $40\% = \frac{40}{100} = 0.4$ 0.4 x 2500 = 1 000

Therefore, 40% of 2500 is 1000. This represents the number of pupils who took the bus when going to school.

Can you do the same for the other questions in the given problem above?

In general, in solving for percentage, we apply the formula below.

Percentage or Percent of a Number = Rate × Base

In symbols, $P = R \times B$, where P is the percentage, R is the rate, and B is the base.

The rate can be expressed as a percent, decimal or fraction. The base is bigger than the percentage if the rate is less than 100%. On the other hand, if the rate is more than 100%, the base is lesser than the percentage.

You may also use the **Techan's triangle**, a strategy to remember the formula, in solving problems involving percent



Try to do the following.

Compute the number of students who took the tricycle, taxi and jeepney when going to school. How many students walk to school?

Use an extra sheet of paper for your solutions.

Congratulations for reaching this far. You are doing well. Now, try to answer the activities that follow.



What's More

Activity 1 Problem Solving Fun!

Directions: Read and understand the following problems. Write you answers and your solutions on a separate sheet of paper.

- 1. Mang Kano harvested 200 sacks of corn. He sold 80% of his harvest. How many sacks of corn did he sell?
- 2. A pair of shoes, with a tag price of P495, is being sold at 10% discount. How much is the discount?
- 3. Two percent of tomatoes in the basket are rotten. If there are 300 tomatoes, how many tomatoes are rotten?
- 4. What is one hundred fifty percent of ninety-eight?
- 5. A cellphone casing is on sale for 85 percent off the regular price. If its original price is forty pesos, how much is the new sale price?
- 6. The Calbayog City basketball team won eight percent of their games. If they played twenty-five games, how many games did they win?

Activity 2 Greater, Lesser or Equal!

Directions: Compare the pairs of equations and use >, <, or = in the space provided in each item. You may use a calculator. Write your answers on a separate answer sheet. The first one is done for you.

1) 70% of 200 _____60% of 240 $\frac{70}{100} \times 200 = 140$ $\frac{60}{100} \times 240 = 144$

The answer is < since 140 < 144.

- 2) 15% of 80 _____ 20% of 65
- 3) 5% of 500 _____ 50% Of 50
- 4) $\frac{3}{4}$ of 1000
 75% of 1000

 5) 25% of 300
 20% of 400
- 6) 12% of 140 _____ 14% of 120 7) 5% of 110 _____ 11% of 50
- 8) 18% of 500 _____ 20% of 450
- 9) 30% of 75 _____ 35% of 60
- 10) 120% of 800 _____30% of 700

Activity 3 Decode Me!

Directions: Find the percentage of each number. Express your answers in decimals. Write the letter of each item above the correct answer in the code below to answer the question "*What sea bird is called a gooney bird*"? You may use a calculator. Write your answers on a separate answer sheet.

Note that
$$1\frac{1}{2}\% = 1.5\% = \frac{1.5}{100} = 0.015$$

 1) 20% of P93.60 _____ T
 7) 40% of P4650 _____ E

 2) 65% of 450 _____ H
 8) 35% of 285 _____ T

 3) $\frac{1}{2}\%$ of 430 _____ R
 9) $33\frac{1}{3}\%$ of 825 _____ A

 4) $\frac{3}{4}\%$ of P2,600 _____ O
 10) 4.5% of 210 _____ S

 5) $5\frac{1}{4}\%$ of P6500 _____ B
 11) $9\frac{1}{2}\%$ of P6000 _____ L

 6) 65% of 800 _____ A
 12) 150% of 62 _____ S

CODE:

99.75 292.5 P1860 520 570 341.25 275 P18.72 2.15 P19.50 93 9.45



What I Have Learned

Directions: Read the following carefully. Do what is asked. Write your answer on your answer sheet.

A. Explain how to find the percentage of a given problem. Consider the given below for your explanation.

Daisy invited 200 kids to her birthday party. Only 10% of the kids did not show up. How many kids came to the party?

B. In your own words, how are you going to solve problems involving percentage? Consider the given below for your explanation.

In a class of 40 students, 60% are boys. How many are girls in the class?

You reached this far. Are you not proud of yourself? Just keep going!



What I Can Do

Now, you will need what you learned from this lesson to solve the next problem. Use an extra sheet of paper for your solutions.

Sonya is a member of a dance group. She needs a shirt for their dance presentation. She visits the two stores in the city to check on the price of a shirt. Store A offers 10% discount for the shirt marked at P 340 while Store B offers 15% discount for the same brand of shirt marked at P360. If you were Sonya, from which store will you buy? Explain your answer.



Assessment

Direction: Read and understand the given. Choose the letter that corresponds to the correct answer. Write your answers and show your solutions on a separate sheet of paper.

- 1. What is $5\frac{1}{2}\%$ of 1000?
 - a. 5.5
 - b. 55
 - c. 550
 - d. 5 500
- 2. The original price of a dress is P350.00. It is on sale for 30% off. Which of the following is the new price of the dress?
 - a. P105
 - b. P245
 - c. P380
 - d. P455
- 3. Daniel invited 300 kids to his birthday party. Only 15% of the kids did not show up. How many kids came to the party?
 - a. 45
 - b. 155
 - c. 255
 - d. 315
- 4. There were 50 pupils in Grade V. If 28% of the pupils were absent, how many pupils were present?
 - a. 34
 - b. 35
 - c. 36
 - d. 37
- 5. John got 20% of an 80-item test incorrectly. How many items did he get correctly?
 - a. 64
 - b. 62
 - c. 18
 - d. 16
- 6. Suman is made anywhere in Calbayog City. It is one of the city's native delicacies. It is sold for P5 per piece. Aling Liza ordered 200 pieces for the fiesta. She asked for a 10% discount from the total amount. If her request would be granted, how much would she pay for the ordered suman?
 - a. P 100
 - b. P 200
 - c. P 500
 - d. P 900

- 7. The Arielle's monthly salary is P20 000.00. If she will be given an increase of 15%, how much will be her new salary?
 - a. P 20 300
 - b. P 21 500
 - c. P 20 300
 - d. P 23 000
- 8. Brgy. Matobato is known for making tinapa (smoked fish) in Calbayog City. If 15% will be discounted for every P500 you buy, how much should you pay if you buy tinapa worth P3 500 originally?
 - a. P 2 550
 - b. P 2 875
 - c. P 2 975
 - d. P 3 000
- 9. Poultry industry is too weak during rainy season. Mang Kanor, a poultry owner, offers a 10% discount for every kilogram of chicken. The price of chicken is P140 per kilogram. How much was his total revenue for the sale of 50 kilograms of chicken?
 - a. P 5 250
 - b. P 6 300
 - c. P 6 600
 - d. P 7 000
- 10. Bibingka is one of the native delicacies in Calbayog City that is sold in Brgy. Matobato or even in other remote barangays. One box is sold for P60. One of the stores offered 8% discount per box for every 10 boxes bought. If I buy 30 boxes for "pasalubong
 - a. P 1 656
 - b. P 1 680
 - c. P 1 800
 - d. P 1 840

There is only one more activity to do. You are doing well. Keep going!



Additional Activities

A. Directions: Copy and complete the table below on a separate sheet of paper. One is done for you.

The **50%** of a number is half of the number. **(Divide by 2)** The **25%** of a number is half and another half of the number. **(Divide by 2 and divide again by 2)** The **10%** of a number is a tenth of the number **(Divide by 10)**

The 10% of a number is a tenth of the number. (Divide by 10)

Number	50 %	25%	10%
1) 148	$148 \div 2 = 74$	$148 \div 2 \div 2 = 37$	$148 \div 10 = 14.8$
2) 100			
3) 200			
4) 80			
5) 4 000			
6) 128			

- B. Directions: Copy the following on your answer sheet. Read, understand and solve the problems. Write your answers and your solutions on your answer sheet.
 - 1. Marlon has P 1000. Daisy has 30% more of that money. How much money does Daisy have?



2. Sixty percent (60%) of the passengers on the bus are girls. If there are 24 girls on the bus, how many passengers are there in all?

0%		60%		10)%
	Girls	Whole = ?				
	Part = 24				To a second seco	

C. Visit a grocery store, bank or online store. Collect examples of base, rates and percentage. Check if you can mentally solve the percentage of a given number. For instance, if an item is marked with 30% off label, can you mentally compute for the new price? Note that the 30% of a number is a tenth of the number times 3.

% = 10/100 = 0.10 % x 2500 = 250	1.0 201	Rate = 15%		
o walked)	фазоцт)		b. Base = P1,000.00	
0 x 5200 = 200	0.2	00.	Tag Price = P1000.	
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