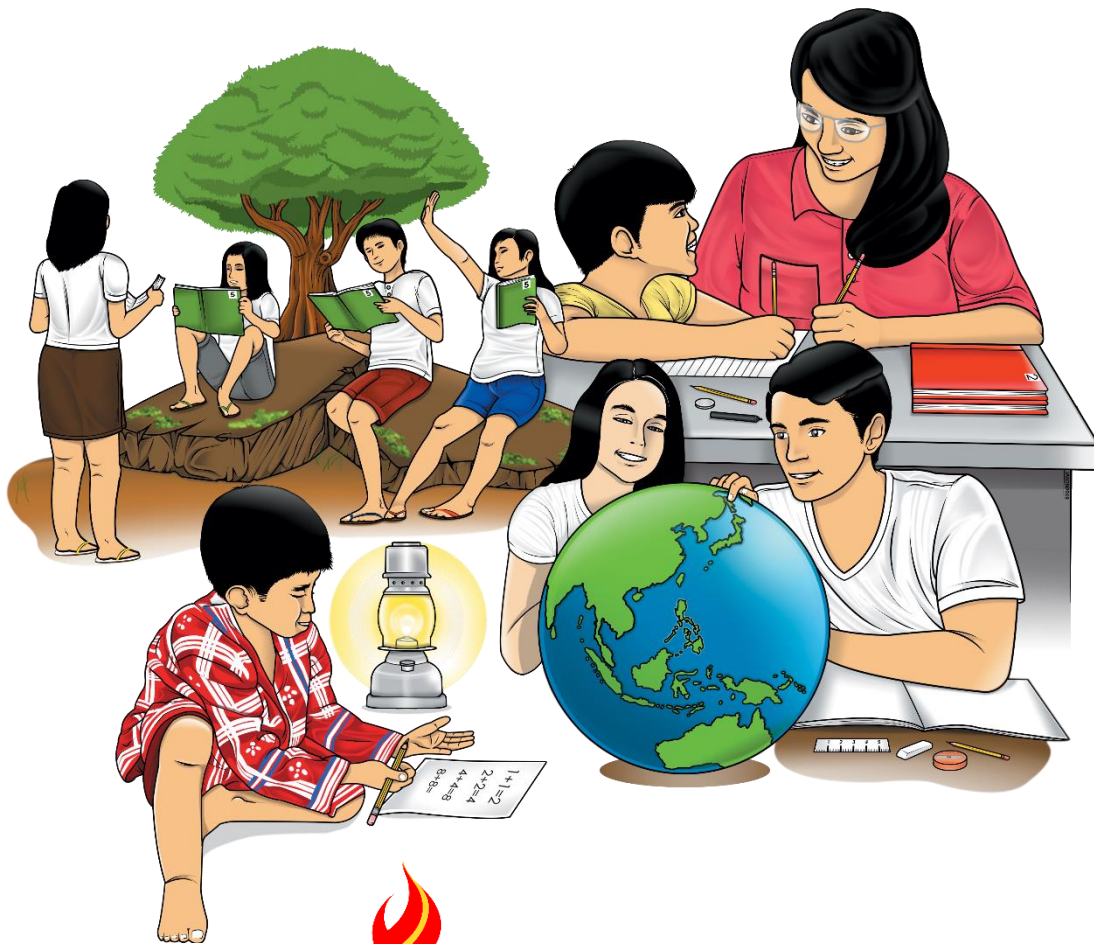


Mathematics

Quarter 2 – Module 5: Solving Problems Involving Percent



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Mathematics– Grade 6
Alternative Delivery Mode
Quarter 2 – Module 5: Solving Problems Involving Percent
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Development Team of the Module

Author: Collin G. Sales and Rosemarie D. Aclan

Editors: Rebecca O. Billones, Ma. Portia G. Galanto and Arthur J. Cotimo

Reviewers: Elleda E. de la Cruz and Rosemarie D. Aclan

Illustrator: Collin G. Sales

Layout Artist: Felizardo S. Valdez III

Management Team: Ramir B. Uytico
Pedro T. Escobarte, Jr.
Elena P. Gonzaga
Donald T. Genine
Ma. Roselyn J. Palcat
Nurdy D. Siason, Jr.
Rowena S. Carillo
Rosemarie D. Aclan
Arthur J. Cotimo
Felizardo S. Valdez III
Marve E. Gelera

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Office Address: Duran Street, Iloilo City

Telefax: (033)336-2816, (033)509-7653

E-mail Address: region6@deped.gov.ph

Mathematics

Quarter 2– Module 5: Solving Problems Involving Percent



What I Need to Know

This module was designed and written with you in mind. It is here to help you master the lessons on solving percent problems such as percent of increase or decrease (discounts, original price, rate of discount, sale price, marked-up price), commission, sales tax, and simple interest (**M6NS-IIe-144**). The scope of this module permits it to be used in many different learning situations. The language used recognizes your diverse vocabulary level as student. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

The module is divided into three lessons, namely:

- Lesson 1 – Solving Percent Problems Involving Percent of Increase or Decrease.
- Lesson 2 – Solving Percent Problems Involving Markups and Discounts.
- Lesson 3 – Solving Percent Problems Involving Commission, Sales Tax, and Simple Interest

After going through this module, you are expected to solve problems involving percent which can be used in real-life situations, specifically to:

1. identify and analyze the elements of problems or situations involving percent and understand the process in solving each component;
2. visualize problems about percent using illustration to show better understanding in the given situation; and,
3. solve different problems involving percent such as change of percent, marked-up, discount, commission, sales tax, and simple interest.



What I Know

A. Compute for the percent of increase in each of the given situation. Write the letter of the correct answer on your answer sheet.

- 1) The number of pupils per class increased from 25 last year to 32 this year. What is the percent of change in the number of pupils?
A. 7% B. 22% C. 28% D. 70%
- 2) Glenn bought a bike for ₱6 400 and he sold it for ₱6 600. What percent of the price did he mark up?
A. 3.125% B. 20% C. 30% D. 200%
- 3) There were 50 members in a basketball club. After some new members came in, there were 60 members altogether. What percent of the basketball club are the new members?
A. 10% B. 17% C. 20% D. 110%
- 4) Ellecon got 72 marks during the last Math test. He got 90 marks at the recent Math test. What percent is the increase in his Math test?
A. 18% B. 20% C. 22% D. 25%
- 5) The school enrolment last year was 240 students. After some new students were transferred into the school, there were 261 students in all. What percent is the increase?
A. 8% B. 8.75% C. 21% D. 87.5

B. Compute for the percent of decrease in a given situation. Write your solutions and answers on your answer sheet.

- 6) There were 80 members in a Math Club. After some members transferred to another club, there were 56 members left.
- 7) The company's employees went down from 75 to 60.
- 8) During the bargain sale in a Department Store, the price of skirt was reduced from ₱240 to ₱204.
- 9) Daily sales diminished from ₱15 000 to ₱12 450.
- 10) The price of one kilogram of mango dropped from ₱120 to ₱90.

Lesson**1****Solving Problems Involving Percent of Increase or Decrease**

In this lesson, you will enhance your knowledge in solving problems involving percent. This will help you understand what percent of change is all about and discuss how to solve problems involving percent change. A step-by-step process on how to solve the problem will be illustrated to you. You must analyze each step very well in order to be guided on how to go about the whole procedures.

***What's In***

Identify whether the missing value is the *percentage*, *base*, or *rate*. Then, find each missing value. Show your computations on your paper.

- 1) 12% of 72 is what number?
- 2) 2.05 is what percent of 82?
- 3) What percent of 48 is 6?
- 4) 8% of a number is 15.6. What is the number?
- 5) What is 6% of 400?

***What's New***

Johnny bought a computer printer on sale at the store. The computer printer was originally sold at ₱9 000 last month and it is now on sale at ₱7 650. What is the percent of change?

How do you solve this problem?



What is It

To solve the given problem, use Polya's 4-Step Approach.

1. Understand

What information is given?

Last month, the printer costs ₱9 000.
Now, its sale price is ₱7 650.

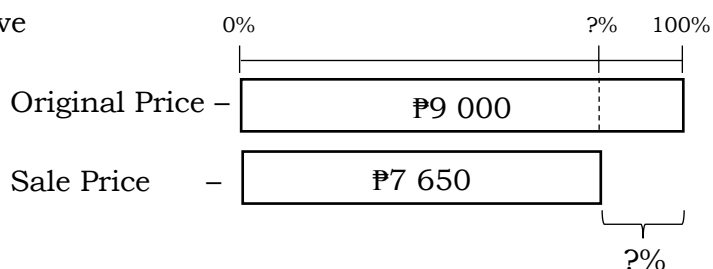
What is asked?

Last month, the printer costs ₱9 000.
Now, its sale price is ₱7 650. I need to find the *percent of change*.

2. Plan

Think: What is the difference between the original price and the sale price?
What percent of the original price is the difference?

3. Solve



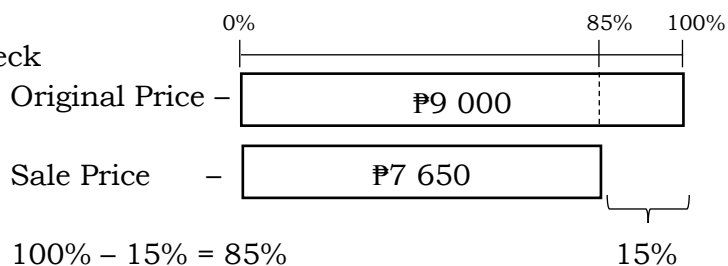
We are comparing last month's price with the sale price now. So, ₱9 000 is the original quantity (100%).

$$\begin{aligned}\text{Decrease in price} &= \text{₱9 000} - \text{₱7 650} \\ &= \text{₱1 350}\end{aligned}$$

This is the amount of change.

$$\begin{aligned}\text{Percent of decrease} &= \frac{\text{₱1 350}}{\text{₱9 000}} \times 100\% \\ &= 0.15 \times 100\% \\ &= 15\%\end{aligned}$$

4. Check



$$100\% - 15\% = 85\%$$

$$15\%$$

The sale price is 85% of the original price.

Method 1:

$$100\% \rightarrow \text{₱9 000}$$

$$1\% \rightarrow \text{₱9 000} \div 100 = \text{₱90}$$

$$85\% \rightarrow 85 \times \text{₱90} = \text{₱7 650}$$

Method 2:

$$\text{Sale price} = 85\% \times \text{Original price}$$

$$= 85\% \times \text{₱9 000}$$

$$= \frac{85}{100} \times \text{₱9 000}$$

$$= 85 \times \text{₱90}$$

$$\text{Sale price} = \text{₱7 650}$$

Answer The percent of change is **15%**.

Here is another example.

An item that costs ₱120 is now being sold at ₱150 due to high demand.
Find the percent of change.

To solve the given problem, use Polya's 4-Step Approach.

1. Understand

What information is given?

Previously, the item costs ₱120.
Now, it is ₱150.

What is asked?

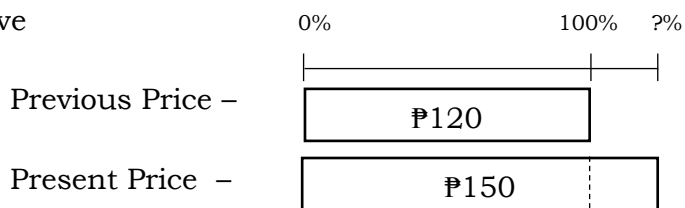
Previously, the item costs ₱120.
Now, due to high demand it is ₱150. I
need to find the *percent of change*.

2. Plan

Think: What is the difference between the previous price and the new price?

What percent of the previous price is the difference?

3. Solve



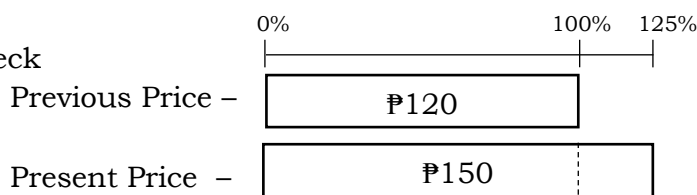
We are comparing the previous price with the present price now. So, ₱120 is the original quantity (100%).

$$\begin{aligned}\text{Increase in price} &= \text{₱150} - \text{₱120} \\ &= \text{₱30}\end{aligned}$$

This is the amount
of *change*.

$$\begin{aligned}\text{Percent of increase} &= \frac{\text{₱30}}{\text{₱120}} \times 100\% \\ &= 0.25 \times 100\% \\ &= 25\%\end{aligned}$$

4. Check



$$100\% + 25\% = 125\%$$

The new price is 25% more than the original price.

Method 1:

$$100\% \rightarrow \text{P}120$$

$$1\% \rightarrow \text{P}120 \div 100 = \text{P}1.20$$

$$125\% \rightarrow 125 \times \text{P}1.20 = \text{P}150$$

Method 2:

$$\text{New price} = 125\% \times \text{Original price}$$

$$= 125\% \times \text{P}120$$

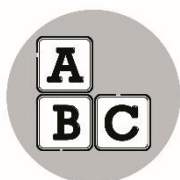
$$= \frac{125}{100} \times \text{P}120$$

$$= 1.25 \times \text{P}120$$

$$\text{New price} = \text{P}150$$

Answer The percent of change is **25%**.

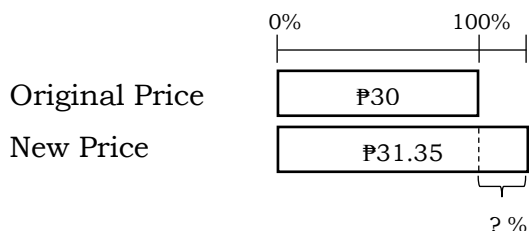
In this lesson, you learned about **Percent of change** which indicates how much a quantity increases or decreases with respect to the original amount. This change can be expressed as **a percent of increase or decrease**.



What's More

Study and complete the solution to each problem carefully. Write your complete answers on your answer sheet.

- 1) Last week, oil price was set at P30.00 per liter. This week, it became P31.35 per liter. Find the percent of increase in the oil price.

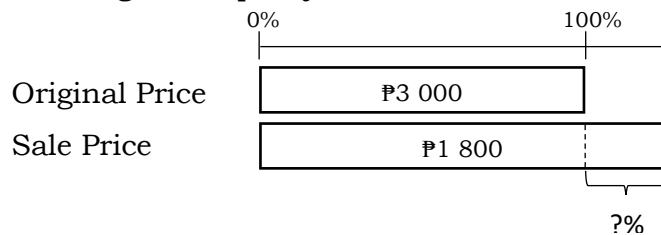


$$\begin{aligned} \text{Increase in price} &= \text{P}31.35 - \text{P} \underline{\hspace{1cm}} \\ &= \text{P} \underline{\hspace{1cm}} \end{aligned}$$

$$\begin{aligned}\text{Percent of Increase} &= \frac{\text{P}______}{\text{P}30} \times 100\% \\ &= ______ \times 100\% \\ &= ______\end{aligned}$$

The percent of increase is _____.

- 2) A cellphone with original price of P3 000 is now sold at P1 800. Solve for percent of change and specify if increase or decrease.

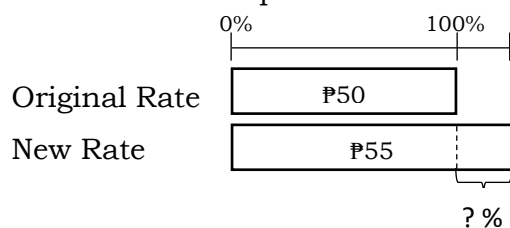


$$\begin{aligned}\text{Decrease in price} &= \text{P}3\,000 - \text{P}______ \\ &= \text{P}______\end{aligned}$$

$$\begin{aligned}\text{Percent of Decrease} &= \frac{\text{P}______}{\text{P}3000} \times 100\% \\ &= ______ \times 100\% \\ &= ______\end{aligned}$$

The percent of decrease is _____.

- 3) Jean works in a supermarket for P50 per hour. If her pay is increased to P55, how much is the percent of increase in her pay?

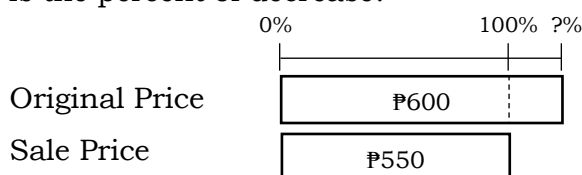


$$\begin{aligned}\text{Increase in price} &= \text{P}55 - \text{P}______ \\ &= \text{P}______\end{aligned}$$

$$\begin{aligned}\text{Percent of Increase} &= \frac{\text{P}______}{\text{P}50} \times 100\% \\ &= ______ \times 100\% \\ &= ______\end{aligned}$$

The percent of increase is _____.

- 4) A pair of pants that cost ₱600 last month is now at ₱550 during the sale. What is the percent of decrease?



$$\text{Decrease in price} = \text{₱}600 - \text{₱}\underline{\hspace{1cm}}$$

$$= \text{₱}\underline{\hspace{1cm}}$$

$$\text{Percent of Decrease} = \frac{\text{₱}\underline{\hspace{1cm}}}{\text{₱}600} \times 100\%$$

$$= \underline{\hspace{1cm}} \times 100\%$$

$$= \underline{\hspace{1cm}}$$

The percent of decrease is .



What I Have Learned

Percent of change can also be **percent of decrease** if the new amount is less than the original amount. To find for the percent of decrease use the following formula.

$$\text{Percent of decrease} = \frac{\text{Amount of Change}}{\text{Original amount}} \times 100$$

Where:

Percent of decrease is the decrease change in the amount of a quantity with respect to the original amount.

Amount of change is the difference between the new and the original amount, wherein the new amount is less than the original amount.

Original Amount is the first recorded amount.

Percent of change is termed **percent of increase** if the new amount is greater than the original amount. To find for the percent of increase use the following formula.

$$\text{Percent of increase} = \frac{\text{Amount of Change}}{\text{Original amount}} \times 100$$

Where:

Percent of increase is the increase change in the amount of a quantity with respect to the original amount.

Amount of change is the difference between the new and the original amount, wherein the new amount is greater than the original amount.

Original Amount is the first recorded amount.

When looking for percent of increase or decrease, just remember how we compute for the rate.

$$\text{Percent of Change} = \frac{\text{Amount of Change}}{\text{Original Quantity}} \times 100\%$$



What I Can Do

- A. Consider the following situations and complete the table below. Fill in the missing cells with the correct answers. Write your answers on your answer sheet.

Situation	Increase or Decrease in amount?	Difference	Percent of Change
1. The water level in Mosqueda reservoir goes down from 840 cubic meter to 798 cubic meter after an hour. What was the percent of change in the amount of water?			
2. Rj's daily allowance last year was ₱75. This year he is receiving an amount of ₱93.00 daily. What is the percent of change in the amount of his allowance?			

3. Stephen enrolled in the gym to lose weight. Before he started his program, he weighed 75 kg. After his training, he weighed 66 kg. What was the percent of change in his weight?			
4. The price of steak per serving changes from ₱1 954 to ₱2 227.56. What is the percent of change in the price of the steak?			
5. Tanaman's electric consumption last month was 105 kW. This month they have consumed 126 kW. What was the percent of change in their electric consumption for the last 2 months?			

B. Read and solve the problems. Show your solutions and label your answers on your answer sheet.

- 6) Joy weighed 80 kilograms last month. She is on diet these days and now she is 76 kilograms. What is the percent of change in Joy's weight?
- 7) Last school year, the Mathematics Club of the school raised ₱1 800 from a fund-raising activity. This year's collected is ₱450 more than the previous year. What is the percent of change?



Assessment

A. Solve for the percent of increase or decrease of the following data. Choose the letter of the correct answer and write it on your answer sheet.

- 1) The price of one sack of rice last year was ₱2 000. This year, the price increased to ₱2 200. Find the percent of increase in the price of one sack of rice from last year to this year.
A. 1% B. 10% C. 20% D. 200%
- 2) Because of rainy season, the average daily attendance of learners in an island school reduced from 40 pupils last month to 35 this month. What is the percent of change in the attendance of the learners?
A. decrease of 12.5% C. increase of 14%
B. decrease of 5% D. increase of 50%
- 3) Due to high demand of facemask (face mask), Aling Maria's Store earned a sales profit of ₱600 this week compare to her last week profit of ₱500. How much was the change in percent of her profit this week than last week?
A. 100% increase C. 5% increase
B. 20% increase D. 1% increase
- 4) Number (The number) of learners who failed in Mathematics 6 during the first quarter decreased from 12 to 3 during the second quarter. What was the percent of change?
A. 9% B. 25% C. 75% D. 90%
- 5) The number of participants joining the school camp decreased from 800 to 600. What is the percent of change?
A. 200% B. 33% C. 25% D. 20%

B. Compute for the percent of increase or decrease in a given situation. Write your solutions and complete answers on your answer sheet.

- 6) According to DOLE, the minimum daily wage of a laborer increased from ₱450 last year to ₱504 this year. Find for the percent of change.
- 7) The price of a kilogram of mangoes decreased from ₱120 to ₱90. What is the percent of change in the price of mangoes?
- 8) Raffel bought a can of 250ml pineapple juice. After she drank some of the pineapple juice, there was 116ml of pineapple juice left in the can. Determine the percent of change in the amount of pineapple juice after drinking.
- 9) A pair of shoes that originally costs ₱1 200 last month, now is being sold at ₱1 344. What is the percent of change in the price of shoes?
- 10) During the price rollback, oil price dropped from ₱30 to ₱29.40 per liter. What was the percent of change in oil price?

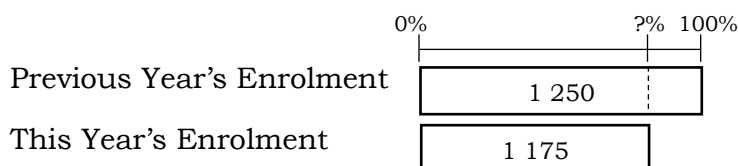


Additional Activities

A. Solve what is asked. Show your solution for each number and label your answer on your answer sheet.

- 1) During summer, the water level in Macopo Dam is consistently decreasing every day to 5% of its water level the previous day. Last May 1, it registered a water level of 1 230 cubic meter. What would be the water level in Macopo Dam on May 5?
- 2) A certain plant increases its height of 0.75 cm every day. Justine starts recording the growth of the plant when it is 10 cm tall. After how many days will Justine have to wait until the plant would be 150% taller since the day he started recording its growth?

B. Write a problem about percent of change using the illustration given below. Write your answer on your answer sheet.





Answer Key

What I Know A. 1) C 2) A 3) C 4) D 5) B 6) 30% 7) 20% 8) 15% 9) 17% 10) 25% What's In 1) 8.64 2) 2.5% 3) 12.5% 4) 195 5) 24 What's More 1) ₱30; ₱1.35 2) ₱1 800; ₱1 200 3) 0.4 4) 40% 5) 40%	What's More 3) ₱50; ₱5 0.1 10% 10% ₱550; ₱50 4) ₱50 0.0833 8.33% 8.33% or 8 1/3% What I Can Do A. <table><tr><td></td><td>Inc/Dec</td><td>Diff</td><td>% of Change</td></tr><tr><td>1</td><td>Dec</td><td>42</td><td>5%</td></tr><tr><td>2</td><td>Inc</td><td>18</td><td>24%</td></tr><tr><td>3</td><td>Dec</td><td>9</td><td>12%</td></tr><tr><td>4</td><td>Inc</td><td>273.56</td><td>14%</td></tr><tr><td>5</td><td>Inc</td><td>21</td><td>20%</td></tr></table> B. 6) 5% decrease 7) 25% increase		Inc/Dec	Diff	% of Change	1	Dec	42	5%	2	Inc	18	24%	3	Dec	9	12%	4	Inc	273.56	14%	5	Inc	21	20%	Assessment A. 1) B 2) A 3) B 4) C 5) C B. 6) 12% 7) 25% 8) 53.6% decrease 9) 12% increase 10) 2% decrease Additional Activities A. 1) 1 001.8426875 cubic meter 2) 7 days B. Answer may vary (Possible Answer) The total enrolment of CGS School last year was 1 250. Due to pandemic, their enrolment this year decreased to 1 175. What was the percent of change in the number of enrollees?
	Inc/Dec	Diff	% of Change																							
1	Dec	42	5%																							
2	Inc	18	24%																							
3	Dec	9	12%																							
4	Inc	273.56	14%																							
5	Inc	21	20%																							



What I Know

A. Solve the problems given in Column A and match them with the answers on Column B. Write the letter of the correct answer on your answer sheet.

Column A	Column B
1) During the sale, all electronic items are subject for 5% discount. Simon buys a cellular phone worth ₱12 690. How much is the discount of his cellular phone?	A) 13%
2) A polo shirt that costs ₱880 is given a discount of ₱114.40. How much is the discount rate given to a polo shirt?	B) 32%
3) Marivic received a ₱72 discount for paying his water bill early. This is 15% of her total bill. How much was her bill?	C) 22%
4) Mang Kanor wanted to mark-up 18% of the cost of his shirt which he bought at ₱975. How much should be the selling price of the shirt then?	D) ₱634.50
5) A refrigerator that costs ₱25 990 originally is to be sold with a mark-up amount of ₱5 717.80. How much is the mark-up rate of the item?	E) ₱1 150.50
6) Thirty percent of the price of the item will be given as mark-up price. If the mark-up is ₱21 567, what is the original price of the item?	F) ₱6 470.10
7) A round-trip bus fare from Iloilo City to Kalibo is ₱780. During Christmas break, commuters are given 10% discount. How much is the discount and how much should one pay to the round-trip fare during this time?	G) ₱71 890
8) Alec bought a toy car and received a discount of ₱126.60. This is 12% of the price of the toy car. How much was the original price?	H) ₱480
9) The mark-up amount of tuition fee in School ABCD for this year is ₱3 598. This is 20% of their tuition fee. How much is their tuition fee this year?	
10) If you are planning to sell a second hand laptop with 8% mark-up rate, how much mark-up will be given to a laptop you bought at ₱12 995 and how much should be its selling price?	

Lesson**2****Solving Percent Problems
Involving Markups and
Discounts**

In your previous lesson, you have learned on how to find for the percentage, base and rate or percent in a given problem. Your learning on the said topics will be applied in this lesson which is the application of percent in solving problems involving discount, original price, rate of discount, sale price and mark-up price. A step-by-step process on how to solve what is asked in the problem will be illustrated to you. You have to analyze each step well in order to be guided on how to go about the whole procedures.

***What's In***

Read and solve the following problems. Write your complete answer on your answer sheet.

- 1) The volume of alcohol in the container is 78ml. After pouring in some more, it is now 96.72 ml. What was the percent of change in the volume of alcohol in the container?
- 2) The number of enrollees in XYZ school dropped from 750 to 660. What is the percent of change in the number of enrollees?
- 3) Gange's electric consumption last month reached 160 kW. This month, their electric reading is 216 kW. What is the percent of change?
- 4) During the summer sale of a Department Store, the price of a trolley bag that costs ₱7 500 was reduced to ₱6 000. Find the percent of decrease.
- 5) Charlyn weighed 80 kg last year. She enrolled in fitness program for 6 months and lost 12 kg. What is the percent of change in Charlyn's weight?

***What's New***

During the Department Store's summer sale, Gemma bought a pair of pants that costs ₱1 890 and was sold at a discount of 20%.

- a. How much was the discount?
- b. How much did she pay for the pair of pants?

How will you solve the given problem?



What is It

In the given problem, this can be solved using Polya's 4-Step Approach.

1. Understand

What information is given?

Gemma bought a pair of pants that costs ₱1 890. It is sold at a discount of 20%.

What is asked?

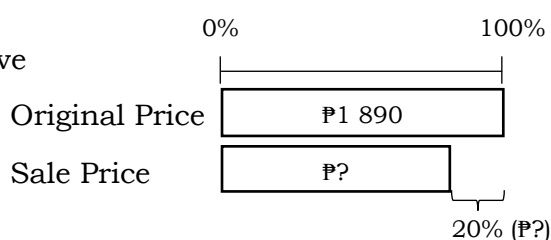
I need to find out the following:
a. the discount given; and,
b. the price of the pants she needs to pay after the discount.

2. Plan

Think: How do you get the 20% of ₱1 890?

After solving for the amount of discount, how much should she pay for her purchase?

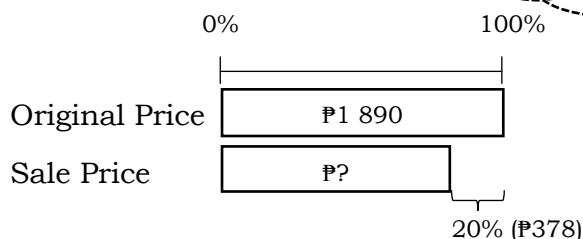
3. Solve



Discount is the amount to be deducted from its original or regular price. So, we need to get the 20% of ₱1 890.

$$\begin{aligned} 20\% \text{ of } ₱1\,890 &= 20\% \times ₱1\,890 \\ &= 0.20 \times ₱1\,890 \\ &= ₱378 \end{aligned}$$

This is the amount of *discount*.



Sale Price on the other hand is the amount to be paid by purchaser after the discount is taken away. So, we subtract the amount of discount from the regular price.

$$₱1\,890 - ₱378 = ₱1\,512$$

Gemma paid for this amount. This is the *sale price*.

4. Check

$$100\% = \text{P}1\ 890$$

$$1\% = \frac{\text{P}1\ 890}{100}$$

$$1\% = \text{P}1\ 8.90$$

The amount of discount:

$$\begin{aligned} 20\% &= 1\% \times 20 \\ &= \text{P}18.90 \times 20 \\ &= \text{P}378 \end{aligned}$$

$$\text{Sale Price} = \text{Regular Price} - \text{Discount}$$

$$\text{P}1\ 512 =$$

$$\text{P}1\ 890 - \text{P}378$$

Answers The amount of discount is **P378**.
 The amount Gemma should pay is **P1 512**.

Let's Try This Problem

A dress is on sale for 15% off the original price. If the sale price of the dress is P990.25, what is its original price?

1. Understand

What information is given?

The sale price of the dress is P990.25. It is on sale for 15% off.

What is asked?

I need to find out the original price of the dress.

2. Plan

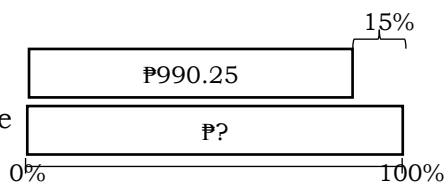
Think: How to find out the original price of the dress?

How do you solve the problem given that the sale price of P990.25 after the 15% off?

3. Solve

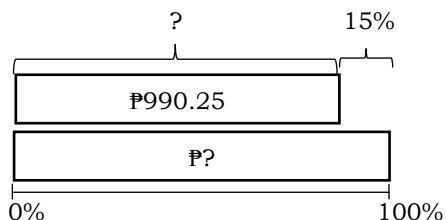
Sale Price

Original Price



The amount of P990.25 and the 15% comprise the 100%. So, we need to know if how many percent is equal to the amount P990.25.

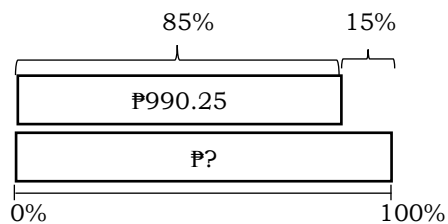
$$100\% = \text{P}990.25 + 15\%$$



$$100\% - 15\% = \text{P}990.25$$

$$85\% = \text{P}990.25$$

This is the *percent equivalent* of the amount P990.25



If P990.25 is equal to 85%, we need to know what is the value of 100% which is the original amount of the dress.

$$\text{Original Price of dress} = \frac{\text{P}990.25}{85\%}$$

$$\text{Original Price of dress} = \frac{\text{P}990.25}{0.85}$$

$$\text{Original Price of dress} = \text{P}1\ 165$$

This is the *original price* of the dress.

4. Check

$$85\% = \text{P}990.25$$

$$1\% = \frac{\text{P}990.25}{85\%}$$

$$1\% = \text{P}11.65$$

The amount of discount:

$$15\% = 1\% \times 15$$

$$= \text{P}11.65 \times 15$$

$$= \text{P}174.75$$

Original amount = sale price + discount

$$\text{P}174.75 + \text{P}990.25 = \text{P}1\ 165$$

Answer The original amount of the dress is P1 165.

Here's another one.

Rene paid P20 335 for a laptop computer that he bought with original price of P24 500. How much was the discount and the rate of discount?

1. Understand

What information is given?

Rene paid P20 335 for a laptop. Its original price is P24 500.

What is asked?

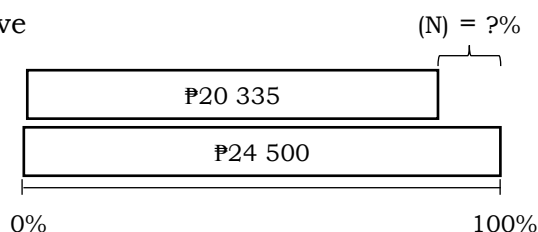
I need to find out the following:
a. the amount of discount; and,
b. the discount rate given.

2. Plan

Think: How will you know the amount of discount?

After solving for the amount of discount, how will you solve for the rate of discount?

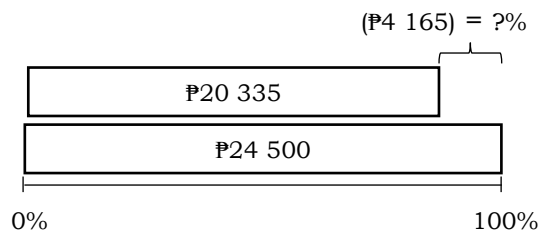
3. Solve



The amount of P24 500 is the original price of the laptop while P20 335 is the discounted amount. So, we need to know if how much is the discount given.

$$\begin{aligned}\text{P}24\,500 - \text{P}20\,335 &= N \\ \text{P}4\,165 &= N\end{aligned}$$

Rene has given this amount of *discount*.



The amount of discount which is P4 165 is a portion of the original price which is P24 500. So, we need to know if how much is this amount compare to the original price by solving for the discount

$$\text{Discount Rate} = \frac{N}{\text{Original Price}} \times 100$$

$$\text{Discount Rate} = \frac{\text{P}4\,165}{\text{P}24\,500} \times 100$$

$$\text{Discount Rate} = 0.17 \times 100$$

$$\text{Discount Rate} = 17\%$$

Rene received this *discount rate* for his laptop.

4. Check

$$100\% = \text{P}24\,500$$

$$1\% = \frac{\text{P}24\,500}{100}$$

$$1\% = \text{P}245$$

Discount Rate:

$$\begin{aligned}17\% &= 1\% \times 17 \\ &= \text{P}245 \times 17 \\ &= \text{P}4\,165\end{aligned}$$

Amount of discount =

Original Price – Discounted Price

$$\text{P}4\,165 = \text{P}24\,500 - \text{P}20\,335$$

Answers The amount of discount is **P4 165**.
 The discount rate is **17%**.

Check this out.

An item that originally costs P7 990 is being sold for P9 588 after a high demand. Find the markup price and markup rate.

1. Understand

What information is given?

The cost of the item is originally P7 990.
After a high demand, it is sold for P9 588.

What is asked?

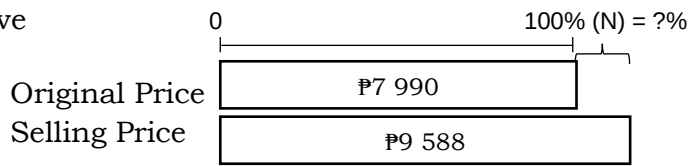
I need to find out the following:
a. the amount of mark-up; and,
b. the mark-up rate of the item.

2. Plan

Think: How do you solve for the amount of mark-up?

After solving for the amount of mark-up, how will you solve for the rate of mark-up?

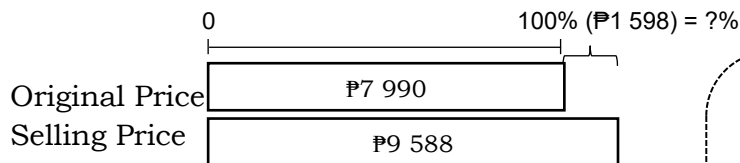
3. Solve



₱7 990 is the original price of the item while ₱9 588 is the price given after a high demand. So, we need to know if how much is the amount of mark-up.

A. Markup: $\text{₱9 588} - \text{₱7 990} = N$
 $\text{₱1 598} = N$

This is the amount of *mark-up* given to the item.



The mark-up amount of ₱1 598 is added to original price which is ₱7 990. So, we need to know if how much is the amount of mark-up compared to the original amount to solve for the mark-up rate.

B. Markup Rate = $\frac{N}{\text{₱7 990}} \times 100$

$$= \frac{\text{₱1 598}}{\text{₱7 990}} \times 100$$

$$= 0.2 \times 100$$

$$= 20\%$$

This is the *mark-up rate* of the item.

4. Check

$$100\% = \text{₱7 990}$$

$$1\% = \frac{\text{₱7 990}}{100}$$

$$1\% = \text{₱79.90}$$

The amount of Mark-up:

$$20\% = 1\% \times 20$$

$$= \text{₱79.90} \times 20$$

$$= \text{₱1 598}$$

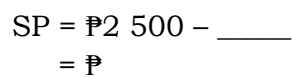
Selling Price = Amount of Mark-up + Original Price

$$\text{₱9 588} = \text{₱1 598} + \text{₱7 990}$$

Answers The amount of mark-up is **₱1 598**.
 The mark-up rate is **20%**.

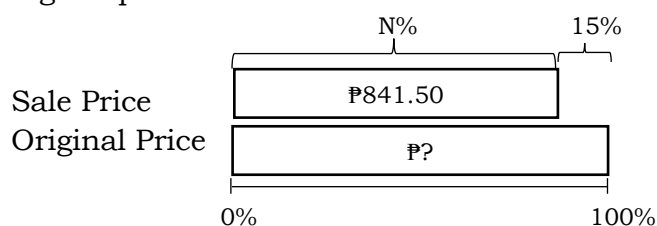


1) A Department Store has its mid-year sale. A knapsack originally priced at ₱2 500 has a discount rate of 20%. How much is the discount and the sale price?


$$\begin{aligned} \text{DR} &= \frac{\text{P}}{\text{P}} \times 100 \\ &= \underline{\hspace{2cm}} \times 100 \\ &= \end{aligned}$$

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- 3) A school bag is on sale at 15% off. The sale price is ₱841.50. What was the original price?



A. Sale Price Rate

$$N\% = 100\% - \underline{\hspace{1cm}}\%$$

$$= \underline{\hspace{1cm}}\%$$

B. Original Price

$$OP = \frac{\text{₱841.50}}{\underline{\hspace{1cm}}\%}$$

$$= \frac{\text{₱841.50}}{\underline{\hspace{1cm}}}$$

$$= \text{₱} \underline{\hspace{1cm}}$$

Therefore, the original price of the bag is ₱_____.

- 4) Thirdy paid ₱15 291.50 for a cellphone that was on sale at 15% discount. What was the original price of the cellphone? How much was the discount?
- 5) Due to the demand of mango bars in the market, the supplier adds a markup of 12% per box in its original price of ₱150. Find the markup price per box. How much is the selling price per box?



What I Have Learned

Problems in percent involving discount can be solved using the following formula:

Discount (D) = Discount Rate (DR) x Original Price (OP)

$$D = DR \times OP$$

Where:

Discount (D) is a decrease in the price of an item. It refers to the amount to be deducted or subtracted from the original or regular price.

Discount Rate (DR) is the percent taken off from the original price or a percent of decrease in a price of an item.

Original Price (OP) is the original price of the item.

$$\text{Discount Rate (DR)} = \frac{\text{Discount (D)}}{\text{Original Price (OP)}} \times 100\% \quad \text{or} \quad \text{DR} = \frac{D}{OP} \times 100\%$$

$$\text{Original Price (OP)} = \frac{\text{Discount (D)}}{\text{Discount Rate (DR)}} \quad \text{or} \quad \text{OP} = \frac{D}{DR}$$

$$\text{Original Price (OP)} = \frac{\text{Sale Price (SP)}}{100\% - \text{Discount Rate (DR)}} \quad \text{or} \quad \text{OP} = \frac{SP}{100\% - DR}$$

Sale Price (SP) also known as discounted price. It is the price of an item after the discount has been deducted.

$$\text{Sale Price (SP)} = \text{Original Price (OP)} - \text{Discount (D)} \quad \text{or} \quad \text{SP} = \text{OP} - D$$

$$\text{Sale Price (SP)} = \text{Original Price (OP)} \times (100\% - \text{Discount Rate (DR)}) \\ \text{or} \quad \text{SP} = \text{OP} \times (100\% - DR)$$

If the problem is looking for the original price, use the formula:

$$\text{Original Price (OP)} = \frac{\text{Sale Price (SP)}}{100\% - \text{Discount Rate (DR)}} \\ \text{OP} = \frac{SP}{100\% - DR} ; \text{ since the given are the discount rate and sale price.}$$

To solve problems involving discount, use the formula:

$$\text{Discount (D)} = \text{Original Price (OP)} - \text{Sale Price (SP)}$$

And, to solve for the discount rate, use the formula,

$$\text{Discount Rate (DR)} = \frac{\text{Discount (D)}}{\text{Original Price (OP)}} \times 100\% \\ \text{DR} = \frac{D}{OP} \times 100\%$$

To solve problems involving markup price, use the following formula:

$$\text{Markup Price (MP)} = \text{Original Price (OP)} \times \text{Markup Rate (MR)} \\ \text{MP} = \text{OP} \times \text{MR}$$

Where:

Markup Price (MP) is the amount added to the price of an item.

Markup Rate (MR) is the percent to be added to the cost of an item or a percent of increase in a price of an item.

On the other hand, to solve for the markup rate, use the formula:

$$\text{Markup Rate (MR)} = \frac{\text{Markup Price (MP)}}{\text{Original Price (OP)}} \\ \text{MR} = \frac{MP}{OP}$$

$$\text{Selling Price (SP)} = \text{Original Price (OP)} + \text{Markup Price (MP)} \\ \text{SP} = \text{OP} + \text{MP}$$

$$\text{Selling Price (SP)} = \text{Original Price} \times (100\% + \text{Markup Rate}) \\ \text{SP} = \text{OP} \times (100\% + \text{MR})$$



What I Can Do

Solve what is asked. Show your solutions and label your answers on your answer sheet. Round your answer to the nearest whole number.

- 1) Arniel was given a 15% discount on a T-shirt that he bought marked at ₱895. How much did he pay for the T-shirt? How much discount did he save?
- 2) Terrence bought a pair of shoes at ₱1 500. She was given a discount of ₱300. What was the rate of discount?
- 3) What is the original price of an item with 15% discount and the sale price is ₱425?
- 4) The department store pays its supplier with ₱450 for a piece of blouse, then sells it at ₱630. How much is the markup price for a piece of blouse? What is the markup rate?
- 5) After applying 50% discount, Sheaba paid ₱750 for a pair of pants. How much was the original price of the pair of pants?



Assessment

A. Solve the following problems and choose the letter of the correct answer from the choices. Write your answers on your answer sheet.

- 1) During the book sale, every item is given a discount of 8%. Kein bought a book and was given a discount of ₱55.60. What was the original price of the book he bought?
A. ₱639.40 B. ₱695.00 C. ₱705.50 D. ₱795.00
- 2) A bag that costs ₱880 is given 10% discount. How much is the sale price of the bag?
A. ₱88 B. ₱792 C. ₱968 D. ₱1 098
- 3) Alexis saved ₱194.85 for buying a set of coloring materials during the class opening sale. He was given 15% off for his purchase. What is the sale price of his purchase?
A. ₱194.85 B. ₱975.00 C. ₱1 104.15 D. ₱1 299
- 4) Collin bought a new CP that costs ₱17 990. He decided to sell it with a profit of 20%. How much should he sell the CP?
A. ₱21 588 B. ₱18 010 C. ₱14392 D. ₱3 598
- 5) A shirt is sold with mark-up price of ₱175.50. This is 18% of the original price. How much is the original price of the shirt?
A. ₱31.59 B. ₱207.09 C. ₱799.50 D. ₱975

B. Solve what is asked in the following problems. Show your solutions and label your answers on your answer sheet.

- 6) A wristwatch with original price of ₱5 990 is on sale for ₱5 091.50. Find the discount rate.
- 7) Camel bought 3 boxes of mango bars at ₱37 per box and 5 packs of baked cashew nuts at ₱150 per pack. If she was given 3% discount in her total purchase, how much discount did she save? How much did she pay in all?
- 8) By how much did Nick pay for the items that he bought if he availed a discount of ₱19.30 at 2% discount rate?
- 9) A calculator with original price of ₱13 575 was sold at ₱11 267.25. How much was the discount? Solve for the rate of discount.
- 10) An appliance center pays ₱25 990 to its supplier for a sala set, then sell it with a markup rate of 10%. How much is the markup price? How much is the selling price?



Additional Activities

- A. Imagine yourself that you are starting a small business. Make at least 5 items you wish to sell and how much markup price you intend to make in each of your item. Follow the table given below. Do this on your separate answer sheet.

Business Name:				
Store Owner:				
Location:				
ITEMS	CAPITAL COST	MARKUP RATE	MARKUP	SELLING PRICE
1.				
2.				
3.				
4.				
5.				

- B. Here are some of the items you can practice more. Solve for what is asked. Show your solutions and label your answer on your answer sheet.

- 1) The grocery store offered 4% discount for all their items. If Lenie Rose bought 6 bottles of calamansi juice at ₱12.75 per bottle, 5 packs of mango playaya at ₱45 per pack and 5 boxes mango polvoron at ₱55 per box, how much did she pay in all? How much discount did she save?
- 2) Jireh paid ₱1 785 for a pair of tennis shoes that was on sale at 20% discount. How much was the original price of the tennis shoes?
- 3) A pair of earrings is on sale for ₱3 937.50 with original price of ₱4 500. What is the rate of discount?
- 4) Katrina sold her one *kaing* of mangoes for ₱1 800 to her friend. She gave her friend a discount of 15%. How much discount did she give to her friend?
- 5) Strong and Brave are twins. They bought 1 dozen of hair clips at 15% discount. If they availed a discount of ₱26.25, how much was the original price of the hair clips? How much did they pay for one dozen hair clips?

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What I Know

A. Study and solve the problems below. Choose the letter of the correct answer from the choices and write it on your answer sheet.

- 1) Jose receives a commission of 5% to the total sales he can make. One day he was able to sell items in the store of at ₱12 690? How much commission will he get?
A. ₱634.60 B. ₱1 205.54 C. ₱12 055.50 D. ₱13 324.50
- 2) All items in Store PQR has 12% sales tax inclusive. Ernesto bought a wallet and observed that in his receipt, he paid a total tax of ₱126 for his purchased wallet. How much is the cost of the wallet?
A. ₱15.12 B. ₱924 C. ₱1 050 D. ₱1 176
- 3) Gina is working in a commission-based company. Her daily allowance depends on the sales she can make. Last Monday, she received a commission allowance of ₱114.40 for the total sales she made amounting to ₱880. What was her commission rate?
A. 11% B. 12% C. 13% D. 14%

For Items 4 to 5, refer to situation A in the box.

Situation A
MNO Bank charges an annual simple interest rate of 12% for any type of loan. Maria borrowed ₱25 000 from this bank.

- 4) How much is the interest of the money Maria borrowed from the bank after a year?
A. ₱2 500 B. ₱3 000 C. ₱22 000 D. ₱28 000
- 5) How much should she return to the bank as payment after a year?
A. ₱28 000 B. ₱22 000 C. ₱3 000 D. ₱2 500

For Items 6 to 7, refer to situation B in the box.

Situation B
Minda borrowed ₱9 000 from Elleda. She promised to pay it after 8 months with simple interest rate of 5% per annum.

- 6) After 8 months, how much is the amount Minda should pay to Elleda?
A. ₱300 B. ₱9 300 C. ₱9 500 D. ₱12 000
- 7) How much is the total interest of the money she borrowed?
A. ₱12 000 B. ₱9 500 C. ₱9 300 D. ₱300

B. Perform the given problems below. Show your solution and complete answers on your answer sheet.

- 8) Jha bought a lipstick with tag price of ₱600 + 8% sales tax. How much should she pay for her purchase?
- 9) Vince earns 3% commission in selling property. This month, he received a total commission of ₱11 400 for selling a parcel of lot. How much is the cost of the property he sold?
- 10) A certain bank charges a simple interest rate of $N\%$ per annum for loans. Rose loaned ₱40 000 and paid a total amount of ₱44 800 after 2 years. How much is the interest rate of this bank?

Lesson**3****Solving Problems Involving Commission, Sales Tax, and Simple Interest**

This lesson is the continuation on the application of percent in solving problems, but in different aspects. These include the commission, sales tax, and simple interest. Like in the previous lesson, still a step-by-step process on how to solve what is asked in the problem will be illustrated to you. You have to analyze each step well in order to be guided on how to go about the whole procedures.

***What's In***

A. Complete the tables below. Write your answers on your answer sheet.

- 1) A set of glassware is given 5% discount. Loremea saved ₱634.50 for buying it. How much is the original price of a set of glassware?
- 2) If you pay your tuition in full upon enrolment, you will be given a discount of ₱3 838.40. If the total tuition fee is ₱23 990, how much is the rate of discount?
- 3) The sale price of a printer is ₱12 241.25. It is given a discount of 12.5%. How much is the original price of the printer?
- 4) Isaac is selling his gold bracelet which he bought at ₱15 990. He plans to make a profit of 17.5%. To what price should he sell his gold bracelet?
- 5) The mark-up price of an item is ₱175.50. It is 18% of the original price. How much is the original price of this item?

***What's New***

Read and analyze the problem below.

Geraldine is a realtor. She receives 5% commission in every property she sells. How much commission will she receive for selling a house and lot that costs ₱9 500 000?

How do you solve this problem?



What is It

In the given problem, this can be solved using Polya's 4-Step Approach.

1. Understand

What information is given?

Geraldine, a realtor receives 5% commission in a property she sells. She was able to sell a house and lot worth ₱9 500 000.

What is asked?

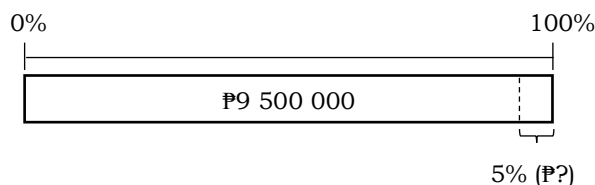
I need to know if how much will she receive as her commission.

2. Plan

Think: How do you solve for her commission?

What is the number sentence for this problem?

3. Solve



5% is a portion of the total amount ₱9 500 000 which is her commission. So, we need to know if how much is 5% of that amount.

$$\begin{aligned} 5\% \times \text{₱9 500 000} &= ? \\ 0.05 \times \text{₱9 500 000} &= ? \\ \text{₱475 000} &= ? \end{aligned}$$

This the amount that Geraldine will receive as her *commission*.

4. Check

$$\begin{aligned} 100\% &= \text{₱9 500 000} \\ 1\% &= \frac{\text{₱9 500 000}}{100} \\ 1\% &= \text{₱95 000} \end{aligned}$$

$$\begin{aligned} 5\% &= 1\% \times 5 \\ &= \text{₱95 000} \times 5 \\ &= \text{₱475 000} \end{aligned}$$

Answer The amount of commission Geraldine will receive is **₱475 000**.

Let's try this one.

An appliance that costs ₱15 000 is subject to be taxed of 12%.
How much is the sales tax?

Solution:

1. Understand

What information is given?

An appliance that costs ₱15 000 is subject to be taxed of 12%.

What is asked?

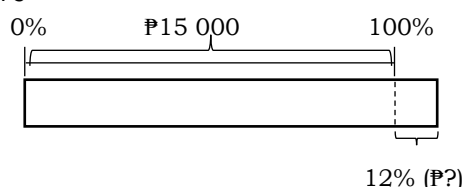
I need to know if how much is the sales tax of this appliance.

2. Plan

Think: How do you solve for sales tax?

What is the number sentence to solve this problem?

3. Solve



The 12% sales tax will be added to the price of the appliance. So, we need to know if how much is 12% of ₱15 000.

$$12\% \times ₱15\,000 = ?$$

$$0.12 \times ₱15\,000 = ?$$

$$₱1\,800 = ?$$

This is the amount of the sales tax for the appliance.

4. Check

$$100\% = ₱15\,000$$

$$1\% = \frac{₱15\,000}{100}$$

$$1\% = ₱150$$

$$12\% = 1\% \times 12$$

$$= ₱150 \times 12$$

$$= ₱1\,800$$

Answer The amount of the sales tax for the appliance is ₱1 800.

Here's another problem.

Lovely deposited ₱8 500 at the bank as her savings. If the bank gives an interest at 6% per annum on savings. How much will she earn after a year?

Solution:

1. Understand

What information is given?

Lovely deposited the amount of ₱8 500. The bank gives an interest of 12% per annum.

What is asked?

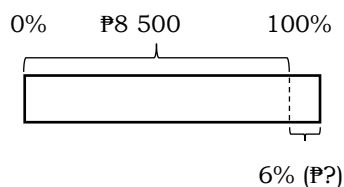
I need to know if how much will she earn after a year.

2. Plan

Think: How do you solve for the interest of money in the bank?

What are the elements involved in solving for interest?

3. Solve



Six (6%) which is the rate interest per annum is the amount she will earn after a year. So, we need to know if how much is 6% of P8 500 then multiply it by 1 year.

$$\begin{aligned}6\% \times \text{P}8\,500 \times 1 &= ? \\0.06 \times \text{P}8\,500 \times 1 &= ? \\ \text{P}510 &= ?\end{aligned}$$

This is the amount of *interest* Lovely will earn.

4. Check

$$100\% = \text{P}8\,500$$

$$1\% = \frac{\text{P}8\,500}{100}$$

$$1\% = \text{P}85$$

$$\begin{aligned}6\% &= 1\% \times 6 \\ &= \text{P}85 \times 6 \\ &= \text{P}510\end{aligned}$$

Answer The amount of interest she will earn after a year is **P510**.

How about this one?

Jorie borrowed money from a lending institution at 9% simple interest. If he paid an interest of P1 620 after 18 months, how much money did he borrow?

Solution:

1. Understand

What information is given?

Jorie paid an interest of P1 620 for the amount he borrowed for 18 months at 9% simple interest.

What is asked?

I need to know if how much is the amount he borrowed.

2. Plan

Think: In problem like this, where the amount of money borrowed is missing, how do you solved for the principal?

How do you write the number sentence of this problem?

3. Solve

$$18 \text{ months} = \underline{\hspace{2cm}} \text{ years}$$

$$12 \text{ months} = 1 \text{ year}$$

$$\begin{aligned}6 \text{ months} &= \frac{1}{2} \text{ year or} \\ &= 0.5 \text{ year}\end{aligned}$$

$$18 \text{ months} = \underline{1.5} \text{ years}$$

If you noticed, our interest rate which is 9% is in yearly term (per annum). However, the time given is in months (18 months). Hence, we need first to convert 18 months to years (18 months = 1.5 years).

$$? = \frac{\text{P}1\,620}{9\% \times 1.5}$$

$$? = \frac{\text{P}1\,620}{0.09 \times 1.5}$$

$$? = \frac{\text{P}1\,620}{0.135}$$

$$? = \text{P}12\,000$$

The amount he borrowed is what we call the principal. So, to solve for the principal, we divide P1 620 which is the interest by the product of the interest rate and the time.

This the amount Jorie borrowed from the lending institution.

4. Check

Interest = Principal x Interest Rate x Time

$$I = \text{P}12\,000 \times 9\% \times 18 \text{ months}$$

$$I = \text{P}12\,000 \times 9\% \times 1.5 \text{ years}$$

$$I = \text{P}12\,000 \times 0.09 \times 1.5$$

$$I = \text{P}1\,620$$

Answer The amount he borrowed from the lending institution is **P12 000**.

Let's go further.

Edwin loaned money at the bank with simple interest. At the end of 2 years, his P20 000 loan earned an interest of P3 000. What was the rate of interest per annum?

Solution:

1. Understand

What information is given?

Edwin loaned P20 000 from a bank for 2 years that earned an interest of P3 000.

What is asked?

I need to know if what is the rate of interest per annum.

2. Plan

Think: How will you solve for the rate of interest?

What is the number sentence for this kind of problem?

3. Solve

$$? = \frac{\text{P}3\,000}{\text{P}20\,000 \times 2} \times 100$$

$$? = \frac{\text{P}3\,000}{\text{P}40\,000} \times 100$$

$$? = 0.075 \times 100$$

$$? = 7.5\%$$

Rate of interest is always expressed in percent. So, after you divided the amount of interest by the product of principal and time, you have to multiply the answer by 100%.

This is the *rate of interest* of the money loaned by Edwin.

4. Check

Interest = Principal x Interest Rate x Time

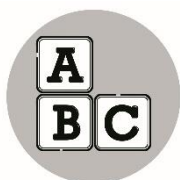
$$I = \text{₱}20\,000 \times 7.5\% \times 2$$

$$I = \text{₱}20\,000 \times 0.075 \times 2$$

$$I = \text{₱}1\,500 \times 2$$

$$I = \text{₱}3\,000$$

Answer The rate of interest for the money he loaned is **7.5%**.



What's More

Analyze and solve what is asked in the following problems. Write your answers on your answer sheet.

- 1) At an interest rate of 5.5% per annum, how much interest will a savings deposit of ₱17 800 earn after 3 years?

What is asked? _____

What are given?

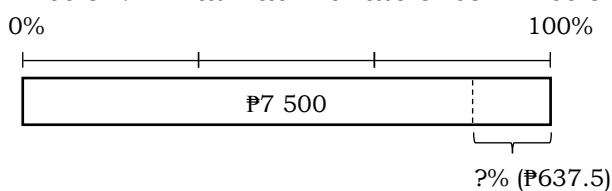
P =		I =	
R =		T =	

Solution: _____

Solve:

Final Answer: _____

- 2) Jerry sold 3 *kaing* of mangoes for ₱7 500 and received ₱637.50 as his commission. What was his rate of commission?



$$\text{Rate of Commission (CR)} = \frac{\text{₱}637.5}{\text{₱}______} \times 100\%$$

$$= ______ \times 100\%$$

$$= ______$$

3) How much interest will ₱26 700 earn at 3% interest per annum for 4 years?

What is asked? _____

What are given?

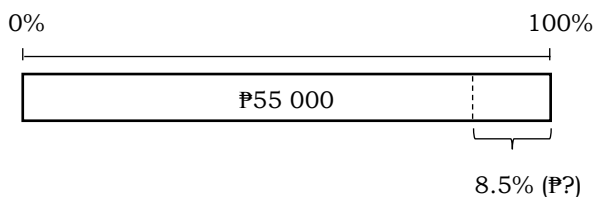
P =		I =	
R =		T =	

Solution: _____

Solve:

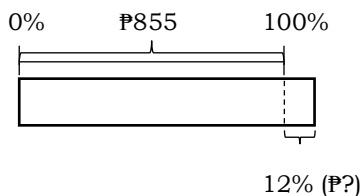
Final Answer: _____

4) Joy is a travel agency agent. She receives 8.5% commission for booking services. How much commission will she receive for booking a total amount of ₱55 000?



$$\begin{aligned}
 \text{Commission (C)} &= ₱55\,000 \times \underline{\hspace{1cm}}\% \\
 &= ₱55\,000 \times \underline{\hspace{1cm}} \\
 &= ₱\underline{\hspace{1cm}}
 \end{aligned}$$

5) Clarisse bought some food from a fast food restaurant. The total amount of her ordered food was ₱855 plus a 12% VAT. How much was the total amount she paid to the cashier?



$$\begin{aligned}
 \text{Tax} &= ₱855 \times \underline{\hspace{1cm}}\% \\
 &= ₱855 \times \underline{\hspace{1cm}} \\
 &= ₱\underline{\hspace{1cm}}
 \end{aligned}$$

$$\begin{aligned}
 \text{Amount to Pay} &= ₱855 + \text{Tax} \\
 &= ₱855 + ₱\underline{\hspace{1cm}} \\
 &= ₱\underline{\hspace{1cm}}
 \end{aligned}$$



What I Have Learned

To solve a problem about Commission (C) use the formula,

$$\text{Commission (C)} = \text{Total Sales (TS)} \times \text{Commission Rate (CR)}$$
$$C = TS \times CR$$

Where:

Commission (C) is a percentage in the form of money a person receives for selling something.

Total Sales (TS) is the total amount of sales made during the period covered by the sales representative.

Commission Rate (CR) is the percent taken off from the selling price.

To solve a problem involving sales tax, use the following formula:

$$\text{Sales Tax (ST)} = \text{Total Amount of Products (TAP)} \times \text{Sales Tax Rate (STR)}$$
$$ST = TAP \times STR$$

Where:

Sales Tax (ST) is an amount of money calculated as a percentage that is added to the cost of purchased goods or items or services.

Total Amount of Products is the total amount paid for purchased goods or items or services.

Sales Tax Rate is a tax charged to consumers based on the purchase amount of certain goods or item or services.

To solve for problems about interest, use the following formula:

$$\text{Interest (I)} = \text{Principal (P)} \times \text{Rate of Interest (R)} \times \text{Time (T)}$$
$$I = P \times R \times T$$

The amount of money one has borrowed is the original amount which in interest problem we call as **principal**. To solve for principal, use the following formula:

$$\text{Principal (P)} = \frac{\text{Interest (I)}}{\text{Rate of Interest (R)} \times \text{Time (T)}}$$
$$P = \frac{I}{R \times T}$$

Where:

Interest (I) is an amount of money earned for borrowing or depositing or investing money over a period of time.

Principal (P) is the amount of money borrowed or deposited or invested.

Rate of Interest (R) is the percent added to the principal amount borrowed or deposited or invested.

Time (T) is the length of time the money has been borrowed or deposited or invested.

To solve for the rate of interest, use this formula:

$$\text{Rate of Interest (R)} = \frac{\text{Interest (I)}}{\text{Principal (P)} \times \text{Time (T)}} \times 100\%$$

$$R = \frac{I}{P \times T} \times 100\%$$

Where:

Rate of Interest (R) is the percent added to the principal amount borrowed or deposited or invested.

Interest (I) is an amount of money earned for borrowing or depositing or investing money over a period of time.

Principal (P) is the amount of money borrowed or deposited or invested.

Time (T) is the length of time the money has been borrowed or deposited or invested.



What I Can Do

Solve what is asked in the following problems. Show your solutions on your answer sheet and label your answers.

- 1) Cora bought a new laptop computer that costs ₱28 985. Looking at her Official Receipt, she found out that a sales tax of ₱2 318.80 was added to the cost of the laptop she bought. Find the sales tax rate.
- 2) Kent borrowed some amount from his best friend at 4% interest per year. After half a year, he paid ₱45 as interest. How much money did he borrow from his friend?
- 3) Lea makes money by commission. She gets 15% of the total sales of everything she sells. If Lea sold ₱37 000 worth of items this month, how much is her commission for the month?
- 4) To buy a pair of shoes, Dolly borrowed ₱3 000 at 3.5% interest for 2 years. How much money will she pay after 2 years?
- 5) Jommel borrowed ₱1 200 at 6.5% interest for 9 months. How much interest will he pay?



Assessment

A. Solve what is asked in the following problems. Choose the letter of the correct answer and write it on your answer sheet.

- 1) Aiko is a car sales agent who earns ₱15 500 monthly plus 8% commission in all her sales. Last month, she sold a car worth ₱1 550 000. How much was her total earnings last month?
A. ₱12 400 B. ₱27 900 C. ₱124 000 D. ₱139 500
- 2) Janet deposits ₱12 000 in her savings account. The bank gives her savings an interest rate of 3.5% per year. How much interest will she receive after one year?
A. ₱420 B. ₱4 200 C. ₱12 420 D. ₱16 200
- 3) The sales tax on a ₱13 800 appliance is ₱1 656. What is the rate of sales tax?
A. 8% B. 11% C. 12% D. 15%
- 4) If you borrowed ₱3 000 at 4.5% simple interest rate per annum, for how longt hat your interest will reach ₱405?
A. 1 year B. 2 years C. 3 years D. 4 years
- 5) Zachary loaned a certain amount in the bank for 3 years at 4% simple interest annually and paid ₱600 interest after the term. How much did he loan?
A. ₱6 000 B. ₱5 000 C. ₱4 000 D. ₱3 200

B. Solve what is asked in the following problems. Show your solutions and label your answers on your answer sheet.

- 1) Rhemia invested ₱3 000 in a cooperative at an interest of 3.9% annually for 5 years. How much is her money after 5 years?
- 2) Joshua's sales commission rate is 6%. How much is his commission from the sales of ₱120 500 worth of duplicating machine?
- 3) How much sales tax is charged for an item that costs ₱250 if the sales tax rate is 6%? How much is the total price?
- 4) To start for a mobile fast food stand, Vangie loaned ₱30 000 from the bank with interest of ₱5 700 for 2 years. How much is the bank interest rate?
- 5) Joemar deposits ₱3 000 in a bank for 2 years, which gives him an interest of 8% per annum. How much interest will he get after one year, 2 years?



Additional Activities

A. Solve what is asked in the following problems. Show your solutions and label your answers on your answer sheet.

- 1) Sheila has ₱25 000 to invest. She wants her money to earn an interest of ₱12 000. She is considering a bank that is offering 5.8% interest per year. For how many years will she have to leave her money in the bank in order to earn an interest of ₱12 000? Round your answer to the nearest two decimal places.
- 2) April sold ₱28 500 worth of advertisement for an annual souvenir program. If her commission was ₱1 282.50, what was her commission rate?
- 3) What is the principal amount if the interest rate is 3.5% a year and the amount of interest is ₱183.75 for 21 months?
- 4) Elleda earned 15% commission for selling a refrigerator at ₱75 900. She deposited 40% of her commission in the bank that offered 3% interest annually on savings. How much money did she deposit? How much interest did her money earn after 2 years?
- 5) A set of 6-piece notebook is sold at ₱150 and the sales tax is 6%. What is the total cost of this set of 6-piece notebook including the sales tax?
- 6) Marina invested ₱25 000 in a savings bank account that earned 7.5% interest per annum. Find the interest earned of her savings if the amount was left in the bank for 3 years.
- 7) Carlito sold a washing machine. He was given 7.5% commission amounting to ₱1 012.50. How much was the cost of the washing machine?



Answer Key

Assessment A. 1) D 2) A 3) C 4) C 5) B B. 6) ₱585 7) ₱7 230 8) ₱15; ₱265 9) 9.5% 10) ₱480 Additional Activities A. 1) 8.28 years 2) 4.5% 3) ₱3 000 4) ₱4 554; ₱273.24 5) ₱159 6) ₱5 625 7) ₱13 500	What's More 2) ₱7 500 0.085 8.5% 3) The interest of ₱26 700 for 4 years. P - ₱26 700 R - 3% I - ? T - 4 I = PxRxt I = ₱26 700 x 3% x 4 Answer: ₱3 204 4) 8.5% 0.85 ₱4 675 5) Tax - 12% 0.12 ₱102.60 Amount to Pay - ₱102.60 ₱957.60 What I Can Do 1) 8% 2) ₱2 250 3) ₱5 550 4) ₱3 210 5) ₱58.50	What I Know A. 1) A 2) C 3) B 4) B 5) A 6) B 7) D B. 8) ₱648 9) ₱380 000 10) 6% What's In 1) ₱12 690 2) 16% 3) ₱13 990 4) ₱18 788.25 5) ₱975 What's More 1) The amount of interest After 3 years. P - ₱17 800 R - 5.5% I - ? T - 3 I = PxRxt I = ₱17 800 x 5.5% x 3 Answer: ₱2 937
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References

- DepEd Most Essential Learning Competencies (MELC) for Mathematics 6.
- DepEd 21st Century MATHletes Textbook for Grade 6.
- Villamayor, Celeridad-Wright, de Joya, 2017, Math for Life 6, Rex Bookstore, Revised Edition.

For inquiries or feedback, please write or call:

Department of Education - Bureau of Learning Resources (DepEd-BLR)

Ground Floor, Bonifacio Bldg., DepEd Complex
Meralco Avenue, Pasig City, Philippines 1600

Telefax: (632) 8634-1072; 8634-1054; 8631-4985

Email Address: blr.lrqad@deped.gov.ph * blr.lrpd@deped.gov.ph