JANUARY
Makugihon
FEBRUARY
Mahigugmaon
MARCH
Matinabangon
APRIL
Matinahuron
MAY
Mahapsay og Malimpyo
JUNE
Maabtik og Musunod sa Insaktong Oras
JULY
Maantigo og Maabilidad
AUGUST
Maginhunahunaon para sa Uban
SEPTEMBER
Madaginoton
OCTOBER
Matinud-anon
NOVEMBER
Masaligan
DECEMBER
Maalampuon

Republic of the Philippines
Department of Education
Regional Office IX, Zamboanga Peninsula

6

Zest for Progress
Zeal of Partnership

# MATHEMATICS

## Quarter 2 – Module 4:

## Solving Percent Problems

Name of Learner: _____

Grade & Section: _____

Name of School: _____

**Mathematics – Grade 6**
**Alternative Delivery Mode**
**Quarter 2 – Module 4: Solving Word Problems**
**First Edition, 2020**



Published by the Department of Education
Secretary: Leonor Magtolis Briones
Undersecretary: Diosdado M. San Antonio

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# What I Need to Know

This module was designed and written with you in mind. It is here to help you master in solving percent problem such as percent of increase and decrease, commission, sales tax and simple interest. 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.

After going through this module, you are expected to solve percent problems such as percent of increase / decrease (discounts, original price, rate of discount, sale price, marked-up price) commission, sales tax, and simple interest.(M6NS-IIe144)

| Lesson 1 | **Solving percent problems such as percent of increase / decrease (discounts, original price, rate of discount, sale price, marked-up price) commission, sales tax, and simple interest.** |
|---|---|

# What's In

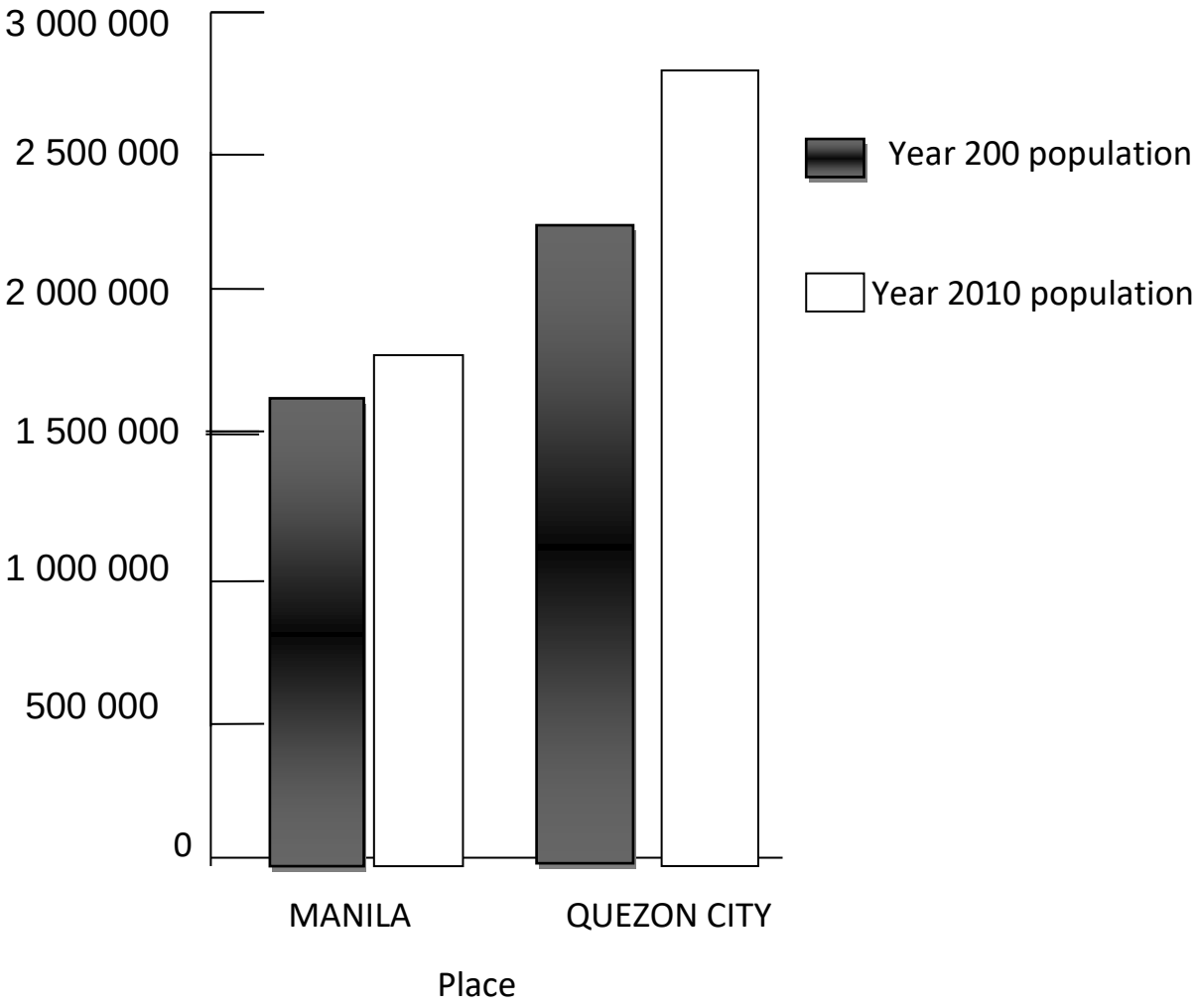
Direction: Calculate for the percentage or value requested.

1. What is 37% of 600? _____
2. What 51% of 200? _____
3. What is 86% of 950? _____
4. What is 71% of 1,000? _____
5. What is 26% of 150? _____

# What's New

**Read the Problem:** To determine which city had the higher population change, let us find the change in population from the census of year 2000 to the census of 2010 in each city. Manila's population increased by 71 089, Which Quezon City's population has increased by 587 889.

Bar Graph of manila and Quezon City Population




Now, to determine which city had the greater percent of change in its population, find the increase in population of each city in percent for you to compare them.

1.) Manila: 71 089 /1 581 082 = _____ ( rounded to the nearest thousandths)
Manila's percent of increase is about =
2.) Quezon city : 587 889 / 2 173 831 = ( rounded to the nearest ten thousandths)
Quezon City's percent of increase is about = %

# What is It

A percent of change indicates how much a quantity increase or decrease with respect to the original amount. Whenever there is a change (increase or decrease), it can be expressed as a percent of increase or of decrease. If the new amount or value is greater than the original amount or value, the percent of change is called percent of increase. If the new amount or value is less than the original amount or value, the percent of change is called percent of decrease.

To find the percent of change, use the following formula,

Percent of change = $\frac{\text{Amount of increase or decrease}}{\text{Original amount}}$

**Example 1.** Find the percent of increase from 8 to 14

Solution : Percent of Increase = $\frac{\text{Amount of increase}}{\text{Original amount}}$

= $\frac{14-8}{8}$ Amount of increase : 14-8=6

= $\frac{6}{8} = \frac{3}{4}$ Simplify

Since percent means “per 100”, constantly follow the step below.

$\frac{N}{100} = \frac{3}{4}$ write the fraction as a percent

4n = 300 Find the product of the extremes and the means

$\frac{4n}{4} = \frac{300}{4}$ divide both sides by 4

N = 75

**Answer**: the percent of increase is 75%

**Example 2**.The number of members of Sipnayan Society from the last two school years is listed on the table below.

| School year | Number of members |
|---|---|
| 2011-2012 | 243 |
| 2012-2013 | 652 |

What is the percent of increase in membership of Sipnayan Society?

Solution:

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

= $\frac{652-243}{243}$ amount of increase is 652 – 243 = 409

= $\frac{409}{243}$ divide

=1.683 round to the nearest thousandths

Since percent means “per 100”, you may also multiply it with 100%.

=1.683 x 100 = 168.3 % write the decimal as a percent

**Answer:** the member of members of Sipnayan Society had increase by about 168.3%.

**Finding Percent of Decrease**

When a particular amount is getting lower from its value, we describe the change (5) as a decrease and we represent this using percent.

Example 3: Find the percent of decrease from 1,278.00 to 1,150.20

Percent of decrease = Amount of decrease

Original amount

=1278- 1150.20 Subtract:

1278 Amount of decrease: = 1278-1150.20

=127.80

= 127.80 Divide

1278

= 0.1 x 100 write decimal as a percent

= 10%

**Answer:** The percent of decrease of decrease is 10%.

## What's More

Find the resulting new increase or decrease quantity due to:

1. 5 % increase in 25 km = _____
2. 8 % decrease in 400. = _____
3. 12 1 % increase in a speed of 600 km/h = _____
4. 30 % decrease in a temperature of 4 Celsius = _____
5. 2.5 % decrease in 800 gram = _____

## What I Have Learned

To calculate a percent of change, first work out the difference (increase or decrease) between the two numbers you are comparing.

Percent of change = Amount of increase or decrease X100%

Original amount

# What I Can Do

Direction: Complete the table. For percent of change, indicate whether the change is an increase or a decrease. Round of your answer to the nearest hundredths.

| Original Quantity | New Quantity | Difference | Percent of change |
|---|---|---|---|
| 1. 10 | 20 | | |
| 2. 25 | 75 | | |
| 3. 42 | 24 | | |
| 4. 100 | 300 | | |
| 5. 89 | 33 | | |

# Assessment

Direction: Solve each problem

1. Due to a typhoon, the harvest of cabbage in Baguio this month decreased from 125 tons to 80 tons. What is the percent of decrease?

2. The price of a kilo of galunggong increase from 73.00 to 75.00 per kilo. Find the percent to increase.

3. There were 12 pupils in a Grade 6 class who failed in the first quarterly test. In the last quarterly test, only 5 failed. What is the percent of decrease in failure?

4. The price of a lot in an exclusive subdivision is 3.1 million for every 100 square meters. This year, the price has increased to 3.348 million. What is the percent of increase in the price?

5. Bob worked a total of 35 hours in January. In February, he worked 45.5 hours, by what percentage did Bob's working hours increase in February?

## ANSWER KEY

**WHAT' IN**

1. 222
2. 102
3. 817
4. 710
5. 39

**ASSESSMENT**

1.36%
2. 2.74%
3. 58.33%
4. 8%
5. 30%

**WHAT'S NEW**

4.5%
27.04%

**WHAT'S MORE**

1.26.25Km
2. 368
3. 675 Km/h
4. 2.8 CELSIUS
5.780 Gram

**WHAT CAN I DO**

1. 10, 100% increase
2. 50, 200% increase
3. 18, 42.86% decrease
4. 200, 200% increase
5.56, 62.92% decrease

## *References*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