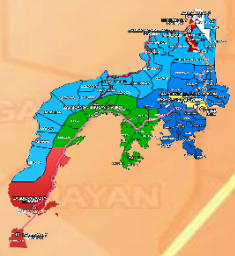
JANUARY
Makugihon
FEBRUARY
Mahigugmaon
MARCH
Matinabangon
APRIL
Matinahuron
MAY
Mahapsay og Malimpyo
JUNE
Maabtik og Musunod sa Insaktong Oras
JULY
Maantigo og Maabilidad
AUGUST
Maginhunahunaon para sa Uban
SEPTEMBER
Madaginoton
OCTOBER
Matinud-anon
NOVEMBER
Masaligan
DECEMBER
Maalampuon

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



Zest for Progress
Zeal of Partnership

5

MATHEMATICS

2ND QUARTER – Module 8:

EQUIVALENT RATIOS

Name of Learner: _____

Grade & Section: _____

Name of School: _____

Mathematics- Grade 5
Alternative Delivery Mode
Quarter 2 - Module 8: Equivalent Ratios
First Edition, 2020

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

Development Team of the Module

Writer: Rothel M. Alverio

Editor: Agustina P. Magalso

Reviewer: Ismael K. Yusoph

Management Team: SDS: Ma. Liza R. Tabilon

ASDS: Judith V. Romaguera

OIC-ASDS: Ma. Judelyn J. Ramos

OIC-ASDS: Armando P. Gumapon

CID Chief: Lilia E. Abello

LR: Evelyn C. Labad

PSDS: Reynaldo S. Alacala

Principal: Amelita G. Sappal

Printed in the Philippines by
Department of Education – Region IX, Zamboanag Peninsula
Office Address: Tiguma, Airport Road, Pagadian City
Telefax:
E-mail Address:

What I Need to Know

After surpassingly doing the activities of this module, you are expected to identify and write equivalent ratio and express ratios in their simplest form.

(M5NS-IIi-124, M5NS-IIi-125)

The goal in Mathematics education is to help and provide you learning experiences that will encourage you to expect and achieve more in this area. The activities of this module are written to further improve your critical thinking, recognize and represent ratios in various forms and context. These acquired skills would soon make a difference in your learning which is essential in your development towards becoming young responsible citizens.

So, find time to study this module and let's build a responsible mathematical community amidst COVID-19 pandemic.

We are with you every step of the way. Good luck, stay safe and God bless.

Lesson Identifying and Writing Equivalent Ratios and Expressing Ratios in their Simplest Form

What's In

What is the ratio of the number of

1. butterflies to stars?
2. stars to butterflies?
3. stars to all objects?

What's New

Activity 1:

Last September, teachers joined the choral singing contest initiated by the LGU of Salug. What is the ratio of the number of male teachers to the number of female teachers who joined the said contest?

Using the table below, write the number of male teachers and female teachers based on the picture above.

Number of Male Teachers	Number of Female Teachers

What is It

There are 3 male and 4 female teachers. The ratio of the number of male teachers to the number of female teachers is 3 : 4. This means that there are 3 male teachers for every 4 female teachers. So, if there are 6 male teachers, there will be also 8 female teachers.

The following ratios can be written as $3 : 4 = 6 : 8$ or $\frac{3}{4} = \frac{6}{8}$

A ratio is a comparison between two quantities having the same or related units.

The number in a ratio are called the terms of the ratio.

Are $\frac{3}{4}$ and $\frac{6}{8}$ equal?

Equal fractions are also named as equal ratios.

We say that $3 : 4 = 6 : 8$ →→ 3 is to 4 is equal to 6 is to 8

Equal ratios or equivalent ratios can be expressed as $a : b = c : d$ or $\frac{a}{b} = \frac{c}{d}$

where **a** is the first term, **b** is the second term, **c** is the third term and **d** is the fourth term.

To check if ratios are equal, use cross multiplication.

$\frac{a}{b} = \frac{c}{d}$ $\qquad$ $\frac{3}{4} = \frac{6}{8}$ $\qquad$ $3 \times 8 = 4 \times 6$

$\qquad\qquad\qquad\qquad\quad 24 = 24$

What are two-term ratios?

A ratio is a comparison between the quantities of two things.

For example:
There are 3 red sweets and 5 yellow sweets in the box. We can say the ratio of red sweets to yellow sweets is 3 to 5.
Ratio can be written with the symbol ':' or as a fraction.

"3 to 5" can be written as "3:"' or $\frac{3}{5}$

When writing a ratio,

- Change the quantities to the same unit if necessary.
- Reduce the ratio to its simplest form.

For example:
What is the ratio of 5 minutes to 5 hours?
First change the hours to minutes. 5 hours = 300 minutes
Ratio = 5:300 = 1:60

What are three-term ratios?

A three-term ratio can be used to compare three quantities.

For example:

There are 5 red sweets, 15 yellow sweets and 30 blue sweets in the box

5 to 15 to 30 = 5:15:30 = $\frac{5}{5}:\frac{15}{5}:\frac{30}{5}$ = 1:3:6

Sometimes, you may need to convert 2 two-term ratios into 1 three-term ratio.

For example:

If the ratio of the number of red shirts to the number of blue shirts is 1:2 and the ratio of blue shirts to green shirts is 1:3. What is the ratio of red shirts to green shirts?

First, you need to make the common item (in this case blue shirts) the same for both ratios. Convert the ratio of blue shirts to green shirts to its equivalent.

$$\frac{blue\ shirt}{green\ shirt} = \frac{1}{3} = \frac{2}{6}$$

What's More

Activity 1: Test if the pairs of ratios are equal. Put a check (√) if they are equal and cross (x) if they are not.

1. 6 : 9, 2 : 3 _____
2. $\frac{3}{4}$, $\frac{6}{8}$ _____
3. 4 : 5, 2 : 5 _____

Activity 2: Write 2 ratios equal to the given ratio in the box

1 $\frac{4}{7}$ --------, ---------

2 $\frac{5}{20}$ --------, ---------

Activity 3: Express each ratio as a fraction, then reduce it to its lowest term.

	Fraction	Lowest Term
1. 10 baskets to 50 mangoes		
2. 12 cats to 16 dogs		
3. 45 books to 9 pupils		

What I Have Learned

A ratio is a comparison between two quantities having the same or related units.

The number in a ratio are called the terms of the ratio.

A ratio is a comparison between the quantities of two things

When writing a ratio,

- change the quantities to the same unit if necessary
- reduce the ratio to its simplest form.

A three-term ratio can be used to compare three quantities

What I Can Do

Direction: Tell whether each pair of ratio is **TRUE** or **FALSE**.

_____1) 5 : 6 = 15 : 24

_____2) 7 : 8 = 14 : 16

Complete the table below.

Ratio	Terms	Greatest Common Factor Between the terms	Ratio in Lowest Terms
5 : 15	5, 15	5	
	8, 12	4	2 : 3
$\frac{6}{36}$	6, 36		1 : 6

Assessment

Directions: Read each item carefully. Encircle the letter of the correct answer.

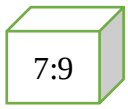
1. Which ratio is correctly expressed for a year to months?

   a. 1 : 1 b. 1 : 15 c. 1 : 12 d. 1 : 7

2. The ratio of vases to flowers is 8 is to 12. What is the simplest form of 8 : 12?

   a. 2 : 3 b. 3 : 2 c. 4 : 3 d. 3 : 4

3. Which ratio is the same as the one in the box?



a. 6 : 8 b. 5 : 4 c. 14 : 16 d. 21 : 27

4. All of these ratios are in lowest term, except one.

a. 1 : 5 b. $\frac{2}{4}$ c. 3 : 11 d. 7 : 12

5. If a ball pen cost ₱20, how much will 3 ball pens cost?

a. ₱ 40 b. ₱ 75 c. ₱ 55 d. ₱ 60

6. Which set contains equivalent ratios?

a. $\frac{4}{5}, \frac{12}{15}$ b. $\frac{3}{7}, \frac{9}{10}$ c. $\frac{2}{15}, \frac{10}{25}$ d. $\frac{1}{3}, \frac{2}{4}$

7. There are 4 Math books for every 12 pupils. This means

a. The ratio of Math books to pupils is bigger.
b. It is also true to say 1 Math book for every 3 pupils.
c. There is only 1 pupil to own 1 Math book.
d. Four pupils will share 1 Math book.

8-10. Read the situation and answer the questions that follow.

In a field trip by the Grade V class, 10 children took the roller coaster ride, 15 took the merry-go-round, 5 took boating and the rest just walk around. There are 35 pupils in the Grade V class.

8. Express the number of pupils who took the merry-go-round to the number of pupils who took boating.

a. 15 : 10 b. 10 : 5 c. 15 : 5 d. 5 : 15

9. The total number of pupils to the number of pupils who took the roller coaster.

a. $\frac{35}{15}$ b. $\frac{15}{35}$ c. $\frac{10}{5}$ d. $\frac{35}{10}$

10. The lowest term for the number of pupils just walk around to the number of pupils who took the roller coaster ride.

a. 1 : 3 b. 1 : 2 c. 1 : 4 d. 1 : 5

Answer Key

What's In

1. 4 ; 6 2. 6 : 4 3. 6 : 10

What's New

Activity 1

Number of Male Teachers - 3

Number of Female Teachers - 4

What's More

Activity 1

1. √ 2. √ 3. X

Activity 2

1. $\frac{4}{7} = \frac{8}{14}, \frac{12}{21}$ 2. $\frac{5}{20} = \frac{1}{4}, \frac{10}{40}$

Activity 3

1. $\frac{10}{50} = \frac{1}{5}$ 2. $\frac{12}{16} = \frac{3}{4}$ 3. $\frac{45}{9} = \frac{5}{1}$

What I Can Do

1) false

2) true

3) 1 : 3

4) 8 : 12

5) 6

Assessment

1)c 2) a 3) d 4) b 5) d 6) a 7) b 8) c 9) d 10) b

References:

Mathematics 5 2st Quarter Teacher's Guide and Learner's Material

Evangelista, Maria Pilita and Ma. Lyn T. Quimboy. iMath 5: K to 12 Curriculum Series. iBook Publishing, Inc. 2017

Ledesma, Lynnie B. and Juanito D. Yusingco. Today's Math 6. 927 Quezon Avenue, Quezon City: Phoenix Publishing House, 1995.

Fisico, Misael Jose S. et. al. 21st Century Mathematics 6. 927 Quezon Avenue, Quezon City: Phoenix Publishing House, 1999.

Burgos, Jaime R. et.al. 21st Century MATHletes. 1253 G. Araneta Avenue, Quezon City: Vibal Group, Inc., 2016.

Lesson Guide in Elementary Mathematics Grade 5 Reprint 2012

Math Beyond Excellence Grade 5 by: Lany A. Osano, MAT, MAED

I AM A FILIPINO
by Carlos P. Romulo

I am a Filipino – inheritor of a glorious past, hostage to the uncertain future. As such, I must prove equal to a two-fold task – the task of meeting my responsibility to the past, and the task of performing my obligation to the future.

I am sprung from a hardy race – child many generations removed of ancient Malayan pioneers. Across the centuries, the memory comes rushing back to me: of brown-skinned men putting out to sea in ships that were as frail as their hearts were stout. Over the sea I see them come, borne upon the billowing wave and the whistling wind, carried upon the mighty swell of hope – hope in the free abundance of the new land that was to be their home and their children's forever.

This is the land they sought and found. Every inch of shore that their eyes first set upon, every hill and mountain that beckoned to them with a green and purple invitation, every mile of rolling plain that their view encompassed, every river and lake that promised a plentiful living and the fruitfulness of commerce, is a hollowed spot to me.

By the strength of their hearts and hands, by every right of law, human and divine, this land and all the appurtenances thereof – the black and fertile soil, the seas and lakes and rivers teeming with fish, the forests with their inexhaustible wealth in wild and timber, the mountains with their bowels swollen with minerals – the whole of this rich and happy land has been for centuries without number, the land of my fathers. This land I received in trust from them, and in trust will pass it to my children, and so on until the world is no more.

I am a Filipino. In my blood runs the immortal seed of heroes – seed that flowered down the centuries in deeds of courage and defiance. In my veins yet pulses the same hot blood that sent Lapulapu to battle against the alien foe, that drove Diego Silang and Dagohoy into rebellion against the foreign oppressor.

That seed is immortal. It is the self-same seed that flowered in the heart of Jose Rizal that morning in Bagumbayan when a volley of shots put an end to all that was mortal of him and made his spirit deathless forever; the same that flowered in the hearts of Bonifacio in Balintawak, of Gregorio del Pilar at Tirad Pass, of Antonio Luna at Calumpit, that bloomed in flowers of frustration in the sad heart of Emilio Aguinaldo at Palanan, and yet burst forth royally again in the proud heart of Manuel L. Quezon when he stood at last on the threshold of ancient Malacanang Palace, in the symbolic act of possession and racial vindication. The seed I bear within me is an immortal seed.

It is the mark of my manhood, the symbol of my dignity as a human being. Like the seeds that were once buried in the tomb of Tutankhamen many thousands of years ago, it shall grow and flower and bear fruit again. It is the insigne of my race, and my generation is but a stage in the unending search of my people for freedom and happiness.

I am a Filipino, child of the marriage of the East and the West. The East, with its languor and mysticism, its passivity and endurance, was my mother, and my sire was the West that came thundering across the seas with the Cross and Sword and the Machine. I am of the East, an eager participant in its struggles for liberation from the imperialist yoke. But I know also that the East must awake from its centuried sleep, shake off the lethargy that has bound its limbs, and start moving where destiny awaits.

For I, too, am of the West, and the vigorous peoples of the West have destroyed forever the peace and quiet that once were ours. I can no longer live, a being apart from those whose world now trembles to the roar of bomb and cannon shot. For no man and no nation is an island, but a part of the main, and there is no longer any East and West – only individuals and nations making those momentous choices that are the hinges upon which history revolves. At the vanguard of progress in this part of the world I stand – a forlorn figure in the eyes of some, but not one defeated and lost. For through the thick, interlacing branches of habit and custom above me I have seen the light of the sun, and I know that it is good. I have seen the light of justice and equality and freedom, my heart has been lifted by the vision of democracy, and I shall not rest until my land and my people shall have been blessed by these, beyond the power of any man or nation to subvert or destroy.

I am a Filipino, and this is my inheritance. What pledge shall I give that I may prove worthy of my inheritance? I shall give the pledge that has come ringing down the corridors of the centuries, and it shall be compounded of the joyous cries of my Malayan forebears when first they saw the contours of this land loom before their eyes, of the battle cries that have resounded in every field of combat from Mactan to Tirad Pass, of the voices of my people when they sing:

"I am a Filipino born to freedom, and I shall not rest until freedom shall have been added unto my inheritance—for myself and my children and my children's children—forever."