JANUARY
Makugihon

FEBRUARY
Mahigugmaon

MARCH
Matinabangon

APRIL
Matinahuron

MAY
Mahapsay og Malin950

JUNE
Maabtik og Musunod sa Ihsaktong Oras

JULY
Mauntigo 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

4

Zest for Progress
Zeal of Partnership

MATHEMATICS

4th QUARTER – Module 3:
VOLUME OF SOLID FIGURES

Name of Learner: _____

Grade & Section: _____

Name of School: _____

Mathematics – Grade 4
Alternative Delivery Mode
Quarter 4 - Module 3: Volume of Solid Figures
First Edition, 2020

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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 discussion are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step 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 instruction carefully before performing each task.

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

Thank you.

What I Need to Know

This module was written as an aid to the concept of volume as the number of cubic units that a solid figure can contain. The module taught us that volume is measured in cubic units. Start with visualizing volume using non-standard units and extended to visualizing volume using standard units.

After going through the module, you are expected to:
- Visualize the volume of solid figures in different situations using non-standard (e.g. marbles, etc.) and standard units. (M4ME-IVd-62)
- Find the volume of a rectangular prism using cu. cm and cu. m. (M4ME-IVe-64)

Believe that learning can continue amidst the health crisis. Good luck, stay safe, and God bless.

What I Know

Directions: Choose the letter that corresponds to your answer.

1. Which of the following is NOT a unit of measurement for a solid figure?
   a. length   b. width   c. time   d. height

2. Which of the following unit is used for measuring volume?
   a. cubic units   b. square units   c. centimeters   d. meter units

3. Which of the following is a non-standard unit?

   a.   b.   c.   d.
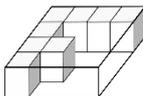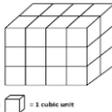
4. A drawer is 5 cm wide, 4 cm deep and 2 cm tall. What is the volume of the drawer?
   a. 40 cm^3 b. 20 cm^3 c. 18 cm^3 d. 15 cm^3

5. Find the volume of the rectangular box?

   a. 24 m^3 b. 9 m^3 c. 12 m^3 d. 16 m^3
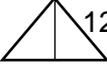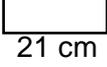
LESSON | VOLUME OF SOLID FIGURES

What's In

Directions: Read the word problem carefully. Then answer the questions that follow.

> Kathy and Jom walk around in the rectangular block of the park every Friday. What is the area of the block if its length is 21 m and its width is 12 m?

1. What unit of measure will be used?
   a. cm^2 b. m^3 c. m^2 d. cm^3

2. What operation will you use?
   a. addition   b. division   c. multiplication   d. subtraction
3. Which formula will be used to find the area of the rectangular block?
   a. A = s x 4   b. A = 2 (l + w)   c. A = b x h   d. A = l x w
4. Which picture represents the problem?
   a. ☐ 21 cm   b. ☐ 12 cm   c. △ 12 cm   d. ☐ 12 cm / 21 cm

5. Which is the correct answer to the problem?
   a. 668 m^2 b. 334 m^2 c. 252 m^2 d. 428 m^2
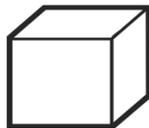
What's New

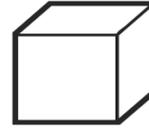**Directions:** Study the situation and the questions that follow.

> Shaine and Rox wanted to find the volume of two empty box with the same size. First, they filled Box A with marbles. About 47 marbles filled the box. Next, they filled Box B with beans. About 105 beans filled the box.

Box A

about 47 marbles

Box B

about 105 beans

Did Shaine and Rox get the same number of units for the volume of the box? **No** Why? **Because it uses different materials.**

What is It

The given problem above shows the amount of space occupied by any solid figure and this we call volume. Non-standard units do not give the same measure of volume for the same container. Marbles and beans are used as non-standard units for measuring the volume of the box.

In the previous situation, marbles and beans can be used to measure volume.

- When a non-standard unit used is small, more units are needed to fill a container.
- When the non-standard unit used is bigger, fewer units are needed to fill the container.
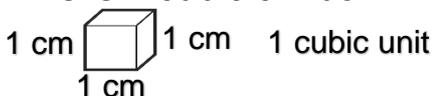
Moreover, non-standard units do not give a consistent and accurate measurement of the volume of a container.
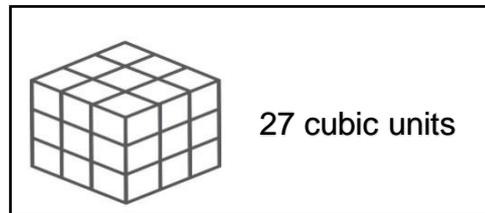
EXAMPLE 1 :

Chris has a rubiks cube measuring 3 cm by 3 cm by 3 cm. What is its volume?

SOLUTION: By counting the cubes to find the volume.

This is 1 cubic cm box.

1 cm   1 cm   1 cubic unit
     1 cm

The figure at the right contains 27 cubes. Its volume is 27 cubic cm or 27 cm^3.
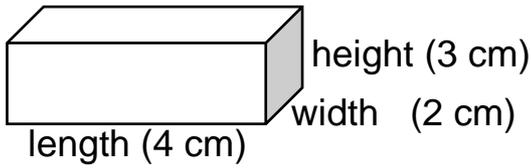
27 cubic units

If 1 cubic unit is equal to 1 cubic cm, then the volume is 27 cubic cm or 27 cm^3. A cubic centimeter (cm^3) is a standard unit for measuring volume. A cubic meter (m^3) is another standard unit for measuring volume.

You can also multiply the number of rows by the number of columns and by the number of layers to find the volume.

V = 3 rows x 3 columns x 3 layers
   = 27 cubes

3 rows of 3 columns
of 3 layers cubes
is 27cubes in all.
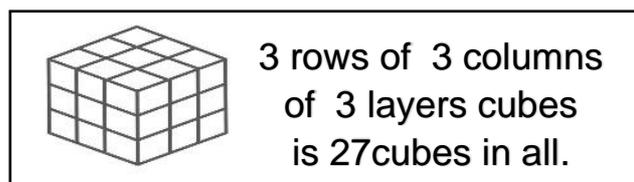
EXAMPLE 2: Find the volume of a rectangular prism by using the formula Volume (V) = l x w x h. Let **V** be the volume, **l** be the length, **w** be the width, and **h** be the height of the rectangular prism. given these data, we can compute for the volume as shown below.
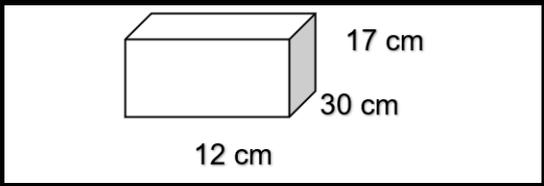
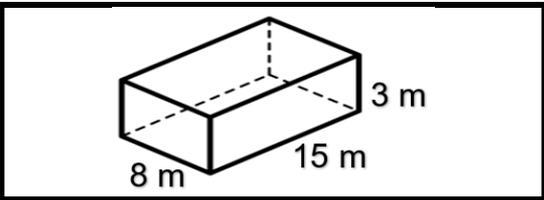|	
height (3 cm) width (2 cm) length (4 cm)	**SOLUTION:** **V = l x w x h** V= 4 cm x 2 cm x 3 cm V= 24 cm³

What's More

Directions: Find the volume. Write only the letter of the correct answer on a separate sheet.

1.

17 cm
30 cm
12 cm

a. 6 120 cm³
b. 5 100 cm³
c. 3 600 cm³
d. 3 060 cm³

2.

3 m
15 m
8 m

a. 250 m³
b. 310 m³
c. 360 m³
d. 390 cm³

3. One ⬜ is one cubic unit. What is its volume?
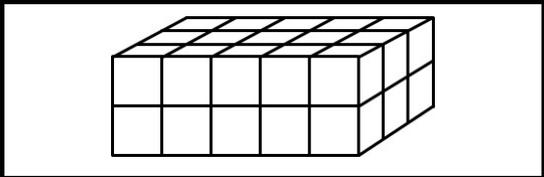
a. 30 cubic units
b. 24 cubic units
c. 18 cubic units
d. 12 cubic units

4.

4 cm
2 cm
3 cm
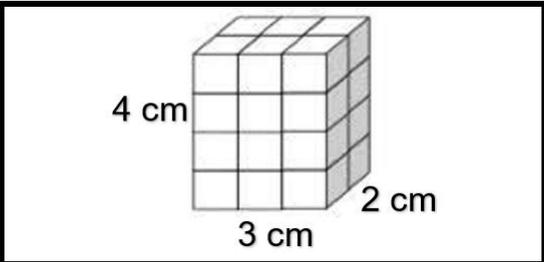
a. 12 cm³
b. 16 cm³
c. 20 cm³
d. 24 cm³

5. What is the volume of the solid figure using 1 cube is equal to 1 cubic cm.?

a. 10 cubic cm
b. 12 cubic cm
c. 14 cubic cm
d. 16 cubic cm

What I Have Learned

Volume is determined by counting the number of cubic units. Volume is expressed in cubic units like m^3 and cm^3. The formula for finding the volume of a rectangular prism is V = l x w x h.

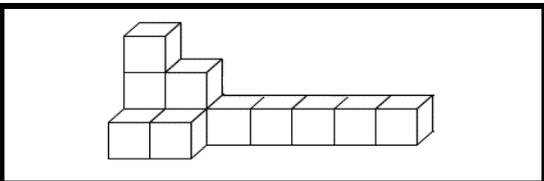**Non-standard** measures of volume are not accurate. They use non-standard units of measures such as pebbles, seeds, marbles and others

Standard measures of volume are very accurate because of its consistency. They use standard units of measure such as centimeter, decimeter, meter, and using standard measuring tools.

What I Can Do

Directions: Read and understand the problem to find its volume.

1. During their gardening in EPP, some pupils are digging a pit that measures 2 m long, 5 m wide, and 2 m deep. How many cubic cm of soil is removed?
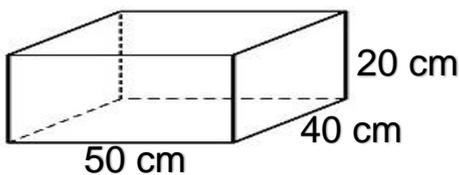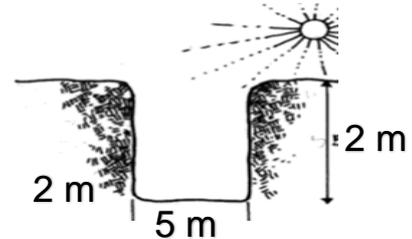
2. Jessica bought a rectangular box to use for her mother's birthday cake. What is the volume of the box is 50 cm long, 40 cm wide, and 20 cm high?

![Teacher illustration]

Assessment

Directions: Choose the letter that corresponds to your answer.

1. Which of the following is measured in cubic units, such as cubic centimeters (cm^3), cubic meters (m^3)?
   a. graphs   b. solid figures   c. volume   d. prism

2. What is the volume of the rectangular prism?
   a.10 cubic units   b.20 cubic units   c. 25cubic units   d.30 cubic units

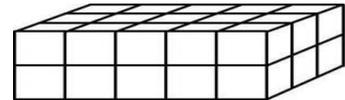3. What is the volume of the rectangular prism given the dimensions?

   2 cm
   5 cm
   10 cm
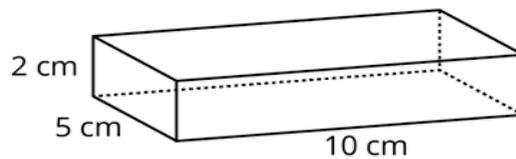
   a. 90 cm^3 b. 100 cm^3 c. 120 cm^3 d. 135 cm^3

4. A cabinet is 1.5 meters wide, 3 meters long and the height is 2 meters. What is the volume of the space under the cabinet?

   1.5 m
   2 m
   3 m
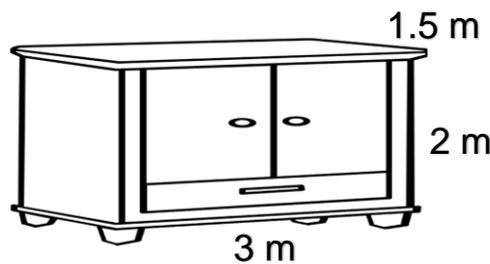
   a. 18.5 m^3 b. 20 m^3 c. 9 m^3 d. 15 m^3

5. The volume of a rectangle toolbox is 240 cm^3. Its length is 4 cm and its height is 6 cm, how wide is it?

   $h = 6$ cm   V = 240 cm^3
   $l = 4$ cm $w = ?$ cm
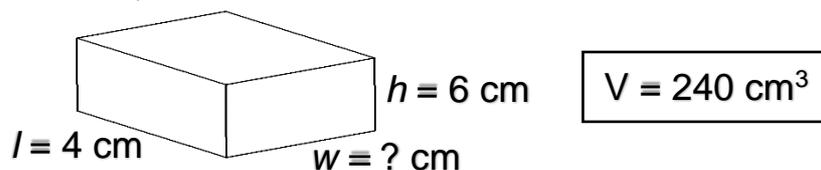
   a. 20 cm   b. 10 cm   c. 15 cm   d. 8 cm
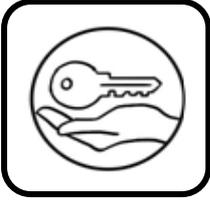
Answer Key

What I Know:

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

Assessment:

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

What's In:

1. c	4. d
2. c	5. c
3. d	

What's More:

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

What I Can do:

1. $V = l \times w \times h$
= 2 m x 5 m x 2 m
= 20 m³

2. $V = l \times w \times h$
= 50 cm x 40 cm x 20 cm
= 40 000 cm³

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References:

Alma R. Tabilang, et al., *Mathematics 4 Teachers Guide*, Pasig City, LEXICON PRESS, INC. 2015, 304 – 306.

Alma R. Tabilang, et al.,2015 *Learners Material,* Pasig City, LEXICON PRESS, INC. 2015, 233 – 235.

Federico C. Castillo, Ed.D. and Ofelia G. Chingcuangco, M.A. Ed., *Soaring High with Mathematics 4 Teacher's Manual,* Quezon City, Saint Matthew's Publishing, 2019, 221 – 223.

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Compressed Curriculum Guide Syllabus for Grade 4 Mathematics.

Most Essential Learning Competencies.

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."