JANUARY
Makugihon
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APRIL
Matinahuron
MAY
Mahapsay og Malimpyo
JUNE
Maabtik og Musunod sa Dsuktong Oras
JULY
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AUGUST
Maginhunahunaon para sa Uban
SEPTEMBER
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DECEMBER
Maalampuon

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

5

Zest for Progress
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MATHEMATICS

4th QUARTER – Module 2: VOLUME OF A CUBE AND A RECTANGULAR PRISM

Name of Learner: _____

Grade & Section: _____

Name of School: _____

Mathematics – Grade 5
Alternative Delivery Mode
Quarter 4 - Module 2: Volume of A Cube and a Rectangular Prism
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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 discussions 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 can proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for a 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. Read the instructions carefully before performing each task.

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

Thank you.

What I Need to Know

Hi, MATHletes! You've just made a jumpstart of the modules for the fourth quarter. Are you ready for another fun-filled lesson in Mathematics? That's good to know!

This time, you will be learning about the **Volume of a Cube and a Rectangular Prism** through this module. Specifically, you should be able to :

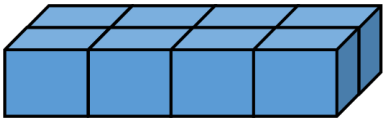
a. visualize the volume of a cube and a rectangular prism (M5ME-IVc-77);
b. name the appropriate unit of measure used for measuring the volume of a cube and a rectangular prism (M5ME-IVc-78);
c. convert cu.cm to cu. m and vice versa; cu.cm to L and vice versa (M5ME-IVc-78).

I hope you will accomplish all the tasks expected of you while learning the Math stuff! Have a great day!

What I Know

Directions: Write the **LETTER** of the correct answer on your answer sheet.

1. Which refers to the number of cubic units that fit inside a solid figure?
   A. Area B. Measurement C. Perimeter D. Volume
2. How many cubic units are there?



   A. 6 C. 10
   B. 8 D. 12
3. Which of the following gives us the correct number of cubic units in a cube?
   A. 15 cubic units by 15 cubic units by 15 cubic units
   B. 18 cubic units by 15 cubic units by 12 cubic units
   C. 25 cubic units by 10 cubic units by 5 cubic units
   D. 34 cubic units by 12 cubic units by 9 cubic units
4. Which is the appropriate unit for measuring the volume of sand in a wooden rectangular box?
   A. liter C. meter
   B. square meter D. cubic centimeter
5. What is 2 500 cm^3 in m^3 ?
   A. 0.0025 m^3 B. 0.025 m^3 C . 2.5 m^3 D. 25 m^3

LESSON 1 VISUALIZING THE VOLUME OF A CUBE AND A RECTANGULAR PRISM

What's In

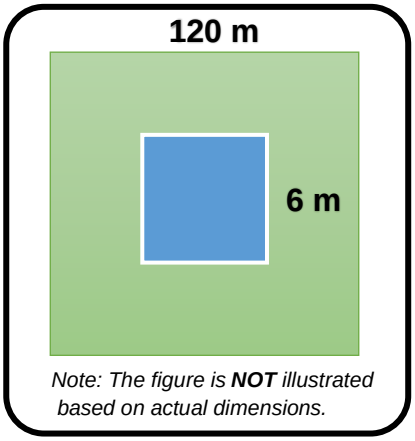
ACTIVITY FIND MY AREA!

Tita Rose has a square garden with a length of 120 m on one side. At the center of the garden lies a square swimming pool with a side length of 6 m.

What is the area of the following?

a. swimming pool

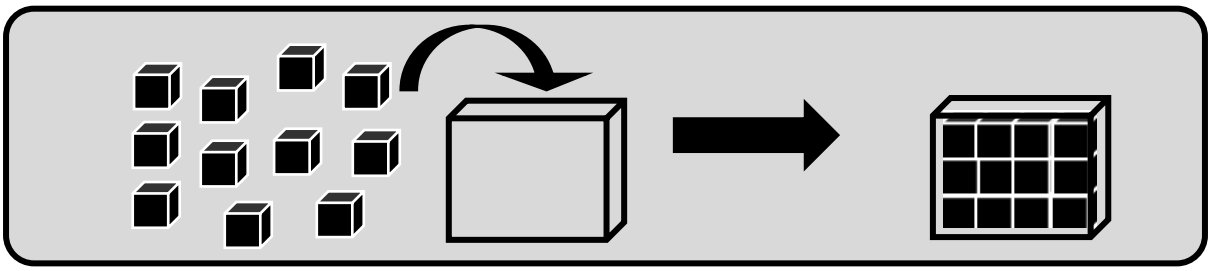
b. garden



*Note: The figure is **NOT** illustrated based on actual dimensions.*

What's New

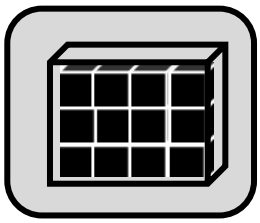
Shaira puts some small cubical boxes into a bigger box to organize her store, as illustrated below.



QUESTION: How many small cubical boxes that can fit inside the big box?

What is It

Let us try to answer the problem earlier. Look at the picture to the right. This gives us the visualization for what we call ***volume***.



Volume is defined as:

"The amount of space occupied by any three- dimensional figure."

Moreover, ***cubes*** are used as models for visualizing volumes.

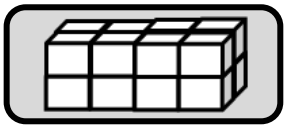
Based on the figure above, how many small cubical boxes can fit inside the big box? That's right! Therefore, Shaira can put 12 small cubical boxes in the big box!

"Volume can be determined by counting the number of cubic units that form a certain 3D-figure".

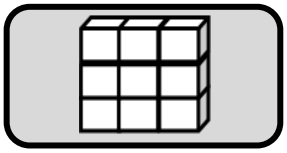
What's More

ACTIVITY **COUNT and DRAW ME!**

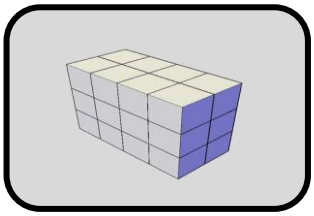
Directions: For items 1 to 3, visualize the volume of the following solid figures by counting how many cubic units each has. Use 1 cube = 1 cubic unit

1. 

____ cubic units

2. 

____ cubic units

3. 

____ cubic units

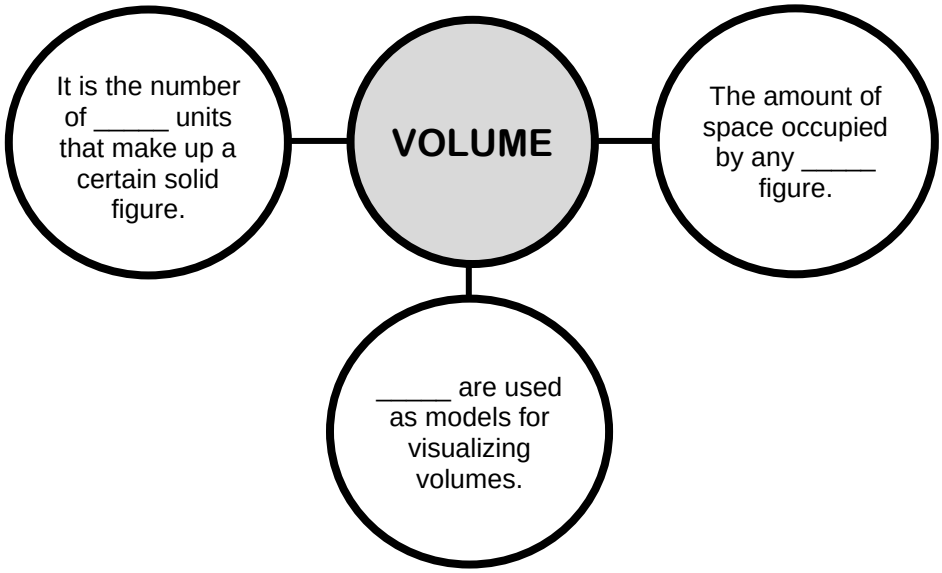
Directions: For items 4 to 5, draw cubes to visualize the given volume of the solid figures. *Note: Use the same size of a cube.*

4. **4 cubic units**

5. **10 cubic units**

What I Have Learned

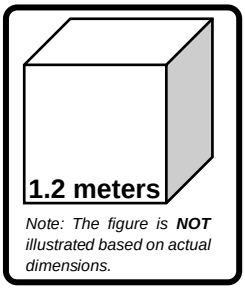
Directions: Use the Bubble Map to complete each statement.



LESSON 2 NAMING THE APPROPRIATE UNIT OF MEASURE FOR VOLUME

What is It

Most relatives abroad send 1.2 m by 1.2 m by 1.2 m Balikbayan box to their families as shown in the figure to the right. These dimensions will give us the volume of the box, using a unit called a ***cubic meter***. This unit has been derived from the unit of *length*.



*Note: The figure is **NOT** illustrated based on actual dimensions.*

"In the International System of Units (SI), the standard unit of volume is the **cubic meter** (m^3)".

THE CUBIC MEASURE

The following table presents the metric units for measuring large and small quantities of volume:

Unit	Symbol
cubic meter	**m^3**
cubic decimeter	**dm^3**
cubic centimeter	**cm^3**

CAPACITY

There is a direct relationship between volume and capacity. *Capacity* is a term used for liquids or the content of the object that holds them.

"The Metric System also includes the **liter** (l) or (L), as a unit of volume".

A *milliliter* (ml) is one-thousandth of a liter. It is used for a small amount of liquids.

What's More

Directions: Name the appropriate unit of measure for the following volume of objects. Choose inside the box.

1. bathtub
2. shoe box
3. soda pop can
4. watch box
5. refrigerator

liter **cubic centimeter**

cubic meter **cubic decimeter**

milliliter

What I Have Learned

What are the units of volume you have learned in this lesson?

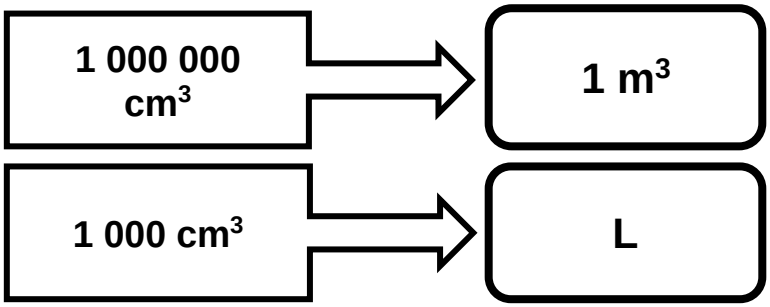
- ✓ Cubic meters (length) and liters (capacity) are two common volume units in the metric system.
- ✓ Other units of measure for volume are used for small quantities.

LESSON 3 CONVERTING CUBIC UNITS

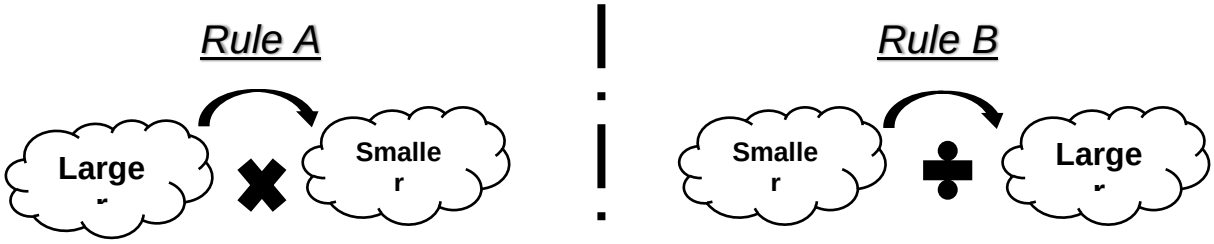
What is It

UNITS OF VOLUME FOR CONVERSION

The figures below serve as a guide for converting one unit of volume to another and vice versa:



BASIC CONVERSION RULES



EXAMPLE	
Problem: *A truck carrying storage boxes has a volume of 24 000 000 cm³.*	
a. How many *cubic meters* will there be?	**b. How about in *liter*?**
➢ Since the conversion is smaller to larger, we shall follow **Rule B**, in which we must divide. ➢ From the conversion table, we shall get the equivalence. Thus, **1m³ = 1 000 000 cm³** ➢ Solve using the given value. m³ = 24 000 000 cm³ ÷ 1 000 000 cm³ ***= 24 m³*** **or**	➢ We shall also follow **Rule B.** ➢ From the conversion table, we shall get the equivalence. Thus, **1L = 1 000 cm³** ➢ Solve using the given value. L = 24 000 000 cm³ ÷ 1 000 **= 24 000 L** **or**

➢ Use the **shortcut** way: *From the given value, move the decimal point six places to the left, if converting from smaller to a larger unit.* *(since 1m^3= 1 000 000 cm^3 with six zeros, therefore, move six places too).* **24 000 000.**	➢ Use the previous conversion result, which is **24m^3**, multiplied by 1 000, since **1 m^3= 1 000 L.** L= 24m^3 x 1 000 **= 24 000 L** ➢ Use the shortcut way: *by simply moving the decimal point three places to the right, if converting from larger to a smaller unit* *(since 1m3=1 000 L, with 3 zeros, therefore, move three places too.* **24.000**
Answer: 24 m^3	***Answer: 24 000 L***

What's More

Directions: Complete the table by converting each given volume to its corresponding equivalent.

	VOLUME	EQUIVALENT
A	**13 000 cm^3**	**_____L**
B	**2 500 m^3**	**_____cm^3**
C	**4 132 cm^3**	**_____m^3**
D	**50.45 m^3**	**_____cm^3**
E	**12 263.12 L**	**_____cm^3**

What I Have Learned

How do you convert one unit to another?

✓ We follow certain rules for conversion: To convert a larger unit to a small unit, we multiply, whereas, from a smaller unit to a larger unit, we divide. In addition, the shortcut way could also help us convert easily by moving the decimal point, either to the left or right, based on the number of zeros in a certain conversion unit.

✓ It is also important to work on similar units of measurement; thus, conversion from one unit to another is needed. Having the knowledge of conversion tables and using them in a more realistic situation would make conversion meaningful and useful.

What I Can Do

Directions: Read and understand each situation and answer the questions that follow.

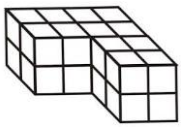
A. How many cubic units are there in a 3 -by -3 Rubik's Cube?
B. What appropriate unit of measuring volume is used for a box of milk in a grocery store?
C. The volume of a fish tank is 25 100 liters. What is it in cubic centimeters?

Assessment

Directions: Write only the **LETTER** of the correct answer on your answer sheet.

1. Which refers to the number of cubic units inside a space figure?
   A. Area
   B. Measurement
   C. Perimeter
   D. Volume

2. How many cubic units are there on this figure



   A. 16
   B. 20
   C. 24
   D. 35

3. Which is the appropriate unit of measure for the volume of a rectangular pool?
   A. cubic centimeter
   B. meter
   C. cubic meter
   D. liter

4. How many cubic centimeters are there in 1000 L?
   A. 1000 cm^3
   B. 10 000 cm^3
   C. 100 000 cm^3
   D. 1 000 000 cm^3

5. To relieve her stress from work, Jameela would always watch the fish move around the 82 cm wide, 78 cm high, and 50 cm long aquarium. If the volume of the aquarium is 319 800 cm^3, how many liters will there be?
   A. 3. 198 L
   B. 31. 98 L
   C. 319. 8 L
   D. 3 198 L

Answer Key

What's New:	What's In:	What I Know:
Lesson 1: 12 cubical boxes	Lesson 1: a. 36 m^2 b. 14 364 m^2	1. D 2. B 3. A 4. D 5. A

What's More:

Lesson 1- 1.) 16 cubic units; 2.) 9 cubic units; 3.) 24 cubic unit; 4 and 5- illustrations may vary

Lesson 2- 1. liter; 2. cubic decimeter; 3. milliliter; 4. cubic centimeter; 5. cubic meter

A. Lesson 3: 1.) 13 L; 2) 2 500 000 000 cm^3; 3) .0041 m^3;
4.) 50 450 000 cm^3; 5.)12 263 120 cm^3

What I Have Learned:

Bubble Map (clockwise) 1. cubic; 2. 3D (three- dimensional) ; 3. cubes

What I Can Do:

1. 3 x 3 x3= 27 cubic units 2. cubic centimeter or milliliter 3. 25 100 000 cm^3

Assessment:

1. D 2. C 3. C 4.D 5. C

References:

Angelina P. Lumbre, et al., 21st Century MATHletes 5 Textbook, Soaring High with Mathematics 4 Textbook, 256-264.

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."