JANUARY
*Makugihon*

FEBRUARY
*Mahigugmaon*

MARCH
*Matinabangon*

APRIL
*Matinahuron*

MAY
*Mahapsay og Malinpyo*

JUNE
*Maabtik og Masunod sa Ihsuktong 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**

**5**

$\mathcal{Z}$est for $\mathcal{P}$rogress
$\mathcal{Z}$eal of $\mathcal{P}$artnership
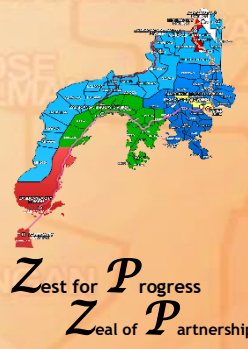
# MATHEMATICS
## 4th QUARTER – Module 4:
## APPLICATION PROBLEM ON THE VOLUME OF CUBE AND RECTANGULAR PRISM

**Name of Learner:** _____

**Grade & Section:** _____

**Name of School:** _____

**Mathematics – Grade 5**
**Alternative Delivery Mode**
**Quarter 4 - Module 4: Application Problem on the Volume of a Cube and**
                        **Rectangular Prism**
**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 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 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

This module was designed to cater to the academic needs of diverse learners in achieving and improving the twin goals of mathematics in basic education levels which are critical thinking and problem-solving. The language used recognizes the vocabulary level of grade 5 students. The lessons followed developmentally sequenced teaching and learning processes to meet the curriculum requirement.

After going through the module, you are expected to solve routine and non-routine problems involving the volume of a cube and Rectangular prism in real-life situations using appropriate strategies and tools. (M5ME- IV- e 83)

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

## What I Know

**Directions:** Match the word problem in column A to the answer in column B. Write the letter of the correct answer on your answer sheet.

| **COLUMN A** | **COLUMN B** |
|---|---|
| 1. A rectanguar block of wood is 3 m long, 2 m wide and 5 m thick. What is its volume? | A. 20 m³ |
| 2. A cabinet has a base area of 4 m , and a height of 3 m and its width is 6m. What is its volume ? | B. 8000 cm³ |
| 3. A shipping company fills cases with boxes that are cubes. They pack 20 boxes of cubes in a case .What are the possible dimension of the case? | C. 216 m³ |
| | D. 72 m³ |
| 4. Find the volume of a cube whose side is 6 m. | |
| 5. A rectangular container is 4m long,5 m wide and 1 m high. What is its volume? | E. 30 m³ |

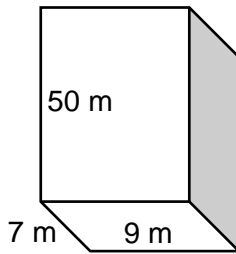## LESSON 1 — APPLICATION PROBLEM ON VOLUME OF CUBE AND RECTANGULAR PRISM
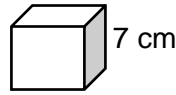
## What's In

**Directions:** Estimate the volume of a cube or rectangular prism. Write your answer on your separate sheet.

1.    12 cm
   4 cm    6 cm

2.    21 cm

3.    12 m
   4 m    7 m

4.



50 m

7 m    9 m

5.



7 cm
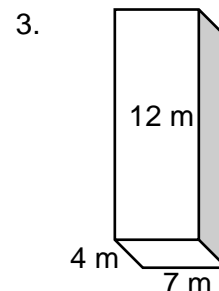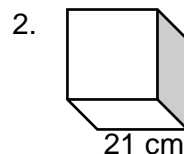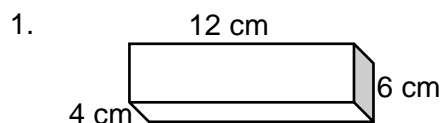


# What's New

Read and understand the word problem in the box.

> Ronald is packing cardboard boxes. He has a choice between two sizes of boxes. One box has the dimension of 40 cm x 20 cm x 30 cm. The other has a dimension of 30 cm x 30 cm x 30 cm. He wants to know which box will hold more space?

| FOUR – STEP PLAN | ILLUSTRATIVE EXAMPLE |
|---|---|
| **UNDERSTAND** | |
| • Know what is asked | Which box will hold more space? |
| • Know what are the given facts | Box 1 = 40 cm x20 cm x 30 cm <br> Box 2 = 30 cm x 30 cm x 30cm |
| **PLAN** | |
| • Determine the operation or formula to use. | Multiplication |
| **SOLVE** | |
| • Show how the solution is done | Box 1. V = 40 cm x 20 cm x 30 cm <br> **V = 24 000 cm³** <br> Box 2. V = 30 cm x 30 cm x 30cm <br> **V = 27 000 cm³** |
| **CHECK AND LOOK BACK** | |
| • Verify using check and balance | 24 000 cm³ = 40 cm x 20 cm x 30cm <br> 24 000 cm³ = 24 000 cm³ <br><br> 27 000 cm³ = 30 cm x 30 cm x 30 cm <br> 27 000 cm³ = 27 000 cm³ |

## What is It

Let's try more example of word problem involving volume applying the four – step plan.

| PROBLEM 1. A swimming pool is 15 m long,7 m wide and 2 m deep. How much water can it hold? | PROBLEM 2. A cubical of wood was cut into 8 equal cubes with sides of 4 cm. What is the volume of the block of wood? |
|---|---|
| **UNDERSTAND** | |
| **What is asked?**<br>- The amount of water the swimming pool can hold. | **What is asked?**<br>- What is the volume of the block of wood? |
| **What are the given facts?**<br>- A swimming pool with the dimensions 15 long, 7 m wide, and 2 m deep. | **What are the given facts?**<br>- A cubical wood which cut into 8 equal cubes of sides 4 cm. |
| **PLAN** | |
| Multiplication<br>V = l x w x h | Multiplication<br>$V = s^3$ or V = s x s x s |
| **SOLVE** | |
| V = l x w x h<br>V = 15m x 7m x 2m<br>V = 210 $m^3$ | Solve first the volume of the identical cubes.<br>   V = 4 cm x 4 cm x 4 cm<br>   V = 64 $cm^3$<br><br>Now, multiply the volume of the cube to 8 to get the volume of the block.<br>   V = 64 $cm^3$ x 8<br>   V = 512 $cm^3$ |
| **CHECK AND LOOK BACK** | |
| 210 $m^3$ = 15m x 7m x 2m<br>210 $m^3$ = 210 $m^3$ | 512 $cm^3$ = 64 $cm^3$ x 64<br>512 $cm^3$ = 512 $cm^3$ |

# What's More

**Directions:** Solve the following problems using the 4-step plan. Write your answer on a separate

| PROBLEM 1. How much space in the room will a cabinet occupy if it is 1.5 m long,0.34 m wide and 2.5 m high? | PROBLEM 2. Five metal cubes with sides of 5 cm were melted and cast into a bigger cube. Find the volume of the new cube. |
|---|---|
| **UNDERSTAND** ||
| **What is asked?** | **What is asked?** |
| **What are the given facts?** | **What are the given facts?** |
| **PLAN** ||
| | |
| **SOLVE** ||
| | |
| **CHECK AND LOOK BACK** ||
| | |

# What I Have Learned

**Directions:** Briefly answer the questions below.

1. How do we solve problems involving the volume of a cube and rectangular prism?

2. What are the steps in solving routine and non-routine problems involving the volume of a cube and rectangular prism?
   a. _____
   b. _____
   c. _____
   d. _____

# What I Can Do

**Directions:** Read the following word problems. Solve it using the 4 – step plan. Write your answers on a separate sheet of paper.

1. A matchbox is 5.5 cm long, 12 cm wide, and 7 cm high. How many cubic cm of matchsticks will fill the box?

2. An antique jewelry box is in a form of a cube that has an edge of 9 cm. Find its volume?

# Assessment

**Directions:** Analyze the given word problems. Write your answer on a separate sheet of paper.

**For items 1-2, refer to the problem in the box.**

> A concrete water tank is 10 meter by 9 meters by 5 meters. What is its volume?

1. What is asked in the problem?
   A. What is its volume?
   B. What is the height of the tank?
   C. How big is the tank?
   D. How wide is the tank?

2. What are the given facts?
   A. Concrete water tank
   B. Area
   C. Volume
   D. 10m, 9m, 5m

3. An exotic fish is placed in a rectangular aquarium that has a length of 12 cm and a width of 7.5 cm. If the water rises 2 cm when the fish is placed in the aquarium, what is the volume of the tank?
   A. 10.5 $m^2$
   B. 180 $m^2$
   C. 195 $m^2$
   D. 210 $m^2$

4. A package arrived today with marshmallow Peeps. If the package has a 15 cm side. What is the volume of the package?

   

   A. 3 375 $cm^3$
   B. 3 380 cm
   C. 3 385 cm $^3$
   D. 3 390 cm

5. My ice maker created the perfect ice cube today. Each side measures 8 cm. What is the volume of the perfect ice cube?

   

   A. 500 $cm^3$
   B. 503 $cm^3$
   C. 509 $cm^3$
   D. 512 $cm^3$
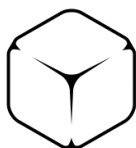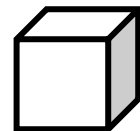
# Answer Key

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**What I Know:**

1. E    2. D    3. B    4. C    5. A

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**What's In:**

1. 288 cm³    2. 8000 cm³    3. 280 cm³
4. 315 cm³    5. 343 cm³

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**What's More:**

1. What is asked? How much space a cabinet occupies in the room?
   What are the given? 1.5m, .34m, 2.5m
   Operation used; Multiplication
   Number Sentences 1.5m x.34m x 2.5m
   Answer: 1.275m³

2. What is asked? Find the volume of the new cube
   What are the given? 5 cubes with sides of 5 cm.
   Operation used, Multiplication
   Number Sentences 2. N = ( 5 x 5 x 5)
   Answer: 625 cm³

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**What I Can Do:**

1. What is asked? how many cubic dm of soil will fill the box?
   What are the given? 5dm,12dm, 7dm
   Operation used: Multiplication
   Number Sentences: 5.5 cm x 12 cm x 7 cm
   Answer: 462 cm³

2. What is asked? Find the volume
   What are the given? 9cm
   Operation used: Multiplication
   Number Sentences: 9cm x 9cm x 9cm
   Answer: 729cm³

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**Assessment:**

1. D    2. D    3. B    4. A    5. D

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# References:

Angelina P. Lumbre et.al., 21$^{st}$ Century MATHletes 5, ed, Mercurio T. Elenzano, Pasig: Vibal Group, INC., 310-318.

# 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."