

- JANUARY**  
*Makugihon*
- FEBRUARY**  
*Mahigugmaon*
- MARCH**  
*Matinabangon*
- APRIL**  
*Matinahuron*
- MAY**  
*Mahapsay og Malimpyo*
- JUNE**  
*Maabtik og Masunod sa  
Dhaklong Orus*
- JULY**  
*Maantigo og Maabilidad*
- AUGUST**  
*Maginhuhunoon  
para sa Urban*
- SEPTEMBER**  
*Madaginton*
- OCTOBER**  
*Matinud-anon*
- NOVEMBER**  
*Masaligan*
- DECEMBER**  
*Maalampyon*



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



4



# MATHEMATICS

## 4<sup>th</sup> QUARTER – Module 4: SOLVING PROBLEMS INVOLVING THE VOLUME OF A RECTANGULAR PRISM



**Name of Learner:** \_\_\_\_\_

**Grade & Section:** \_\_\_\_\_

**Name of School:** \_\_\_\_\_

**Mathematics – Grade 4**  
**Alternative Delivery Mode**  
**Quarter 4 - Module 4: Solving Problem Involving the Volume of a 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 written as an aid in the lesson of the fourth quarter of grade 4 Mathematics. The module follows a step-by step approach in solving routine and non-routine problems involving the volume of a rectangular prism. It covers the key concepts of volume of rectangular prism.

After going through the module, you are expected to solve routine and non-routine problems involving the volume of a rectangular prism. (M4ME-IVf-65)

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



## What I Know

**Directions:** Read and answer the word problems. Write the letter of the correct answer on a separate sheet.

The cabinet measures 70 cm long, 40 cm wide and 170 cm high.  
What is the volume?

1. What is asked in the problem?
  - a. volume of cabinet
  - b. area of the cabinet
  - c. width of the cabinet
  - d. height of the cabinet
  
2. What are the given facts?
  - a. 70 m, 40 m, 170 m
  - b. 70 dm L, 40 dm W, 170 dm H
  - c. 70 cm long, 40 cm wide, 170 cm high
  - d. 70 dm, 40 dm, 170 dm
  
3. What is the answer?
  - a. 47 600 cm<sup>3</sup>
  - b. 476 000 cm<sup>3</sup>
  - c. 47 000 cm<sup>3</sup>
  - d. 4 700 cm<sup>3</sup>

A wooden cube has a volume of 1 000 cm<sup>3</sup>. How many 8 cm<sup>3</sup> can you cut from it? What is the shape of the wooden cube?

4. What are the given facts in the problem?
  - a. 1 000 cm<sup>3</sup> and 8 cm<sup>3</sup>
  - b. 1 000 dm<sup>3</sup> and 8 dm<sup>3</sup>
  - c. 1 000 m<sup>3</sup> and 8 m<sup>3</sup>
  - d. 1 000 inches and 8 inches
  
5. What is the correct answer?
  - a. 800cm<sup>3</sup>
  - b. 8000cm<sup>2</sup>
  - c. 8000cm<sup>3</sup>
  - d. 80000cm<sup>2</sup>

## LESSON

# SOLVING PROBLEM INVOLVING THE VOLUME OF A RECTANGULAR PRISM



## What's In

**Directions:** Given the dimensions below, find the volume of the following rectangular prisms.

1.  $L = 5 \text{ cm}$   
 $W = 4 \text{ cm}$   
 $H = 3 \text{ cm}$   
 $V = \underline{\hspace{2cm}}$

2.  $L = 8 \text{ cm}$   
 $W = 6 \text{ cm}$   
 $H = 7 \text{ cm}$   
 $V = \underline{\hspace{2cm}}$

3.  $L = 7 \text{ m}$   
 $W = 5 \text{ m}$   
 $H = 4 \text{ m}$   
 $V = \underline{\hspace{2cm}}$

4.  $L = 9 \text{ cm}$   
 $W = 3 \text{ cm}$   
 $H = 2 \text{ cm}$   
 $V = \underline{\hspace{2cm}}$

5.  $L = 9 \text{ cm}$   
 $W = 6 \text{ cm}$   
 $H = 3 \text{ cm}$   
 $V = \underline{\hspace{2cm}}$



## What's New

**Directions:** Let us try to answer the given problem.

Jona gave her mother a diamond ring as her gift for the Mother's Day. Since the ring was so expensive, she placed it in a jewelry box which measures 12 cm long, 8 cm wide, and 6 cm high. What is the volume of the jewelry box?



## What is It

The given problem above is an example of a routine problem. In **solving routine** problems involving the volume of a rectangular prism we use the 4-step plan. Below is an example of a routine problem involving of a rectangular prism.



| STEPS  | ANSWERS FOR PROBLEM A  |
|--|--|
| <b>Understand:</b>   |  |
| 1. Know what is asked in the problem.  | The volume of the box.   |
| 2. Know the given facts.   | $l = 12 \text{ cm}, w = 8 \text{ cm}, h = 6 \text{ cm}$  |
| <b>Plan:</b>   |  |
| 3. Determine the operation or formula to be used.  | $V = l \times w \times h$  |
| <b>Solve:</b>  |  |
| 4. Show the solution using the formula.  | $V = l \times w \times h$ $= 12 \text{ cm} \times 8 \text{ cm} \times 6 \text{ cm}$ $= 576 \text{ cm}^3$ |
| <b>Check and Look back:</b>  |  |
| <ul style="list-style-type: none"> <li>• Check your answer</li> <li>• State your answer</li> </ul> | The volume of the jewelry box is $576 \text{ cm}^3$  |

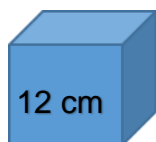
Here is another word problem which is an example of a Non-Routine Problem.

Box A measures 12 cm on each edge and it is full. Box B measures 10 cm on each edge and it is empty. Half of the contents of Box A is emptied into Box B. How many cubic centimeters space remain in Box A?

### SOLUTION:

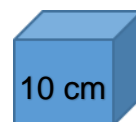
You can use any strategy to find the answer to this problem.

**STEP 1:** Identifying the volume of each box.



Box A

$$\begin{aligned}
 V &= l \times w \times h \\
 &= 12 \text{ cm} \times 12 \text{ cm} \times 12 \text{ cm} \\
 &= 1728 \text{ cm}^3
 \end{aligned}$$



Box B

$$\begin{aligned}
 V &= l \times w \times h \\
 &= 10 \text{ cm} \times 10 \text{ cm} \times 10 \text{ cm} \\
 &= 1000 \text{ cm}^3
 \end{aligned}$$

**STEP 2:** We are going to divide the volume of the Box A into 2 since Box A is full and half of the content of it will be emptied into Box B.

$$V_{\text{Box A}} = 1728 \text{ cm}^3 \div 2 = 879 \text{ cm}^3$$

**STEP 3:** State the answer.

**The remaining capacity of Box A is 879 cm<sup>3</sup>.**



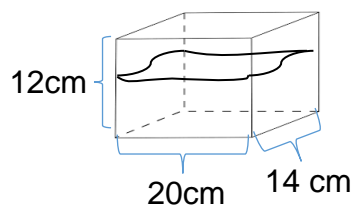
## What's More

**Directions:** Read the word problem carefully and find its volume following the 4-steps.

**Problem A:** A baseball player has a locker which measures 40 cm long, 25 cm wide, and 15 cm high. What is the volume of the locker?

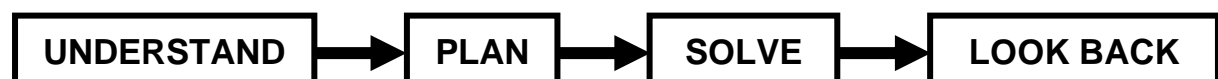
**Problem B:** The width, height, and the volume of a rectangular prism are 7 m, 4 m, and 140 m, respectively. Find the length of the prism.

**Problem C:** Yuna owns an aquarium which measures 20cmx14cmx12cm. What is the volume of the of aquarium unfilled if it has already water up to 7cm in height?



## What I Have Learned

- To solve routine problems involving the volume of a rectangular prism, just follow the 4-step process.



- To solve non-routine problems, you can use any strategy to solve non-routine problems.
- In finding the volume of the rectangular prism, we multiply the length, width and height. Then, we express the answer in cubic units.



## What I Can Do

**Directions:** Read and answer the problem using any of the given strategy.

1. A water tank measures 4 meters x 2 meters x 2 meters. How much water can it hold when it is full?
2. A 6 cm x 3 cm x 6 cm container is half-filled with salt. How much salt is still needed to completely fill the container?



## Assessment

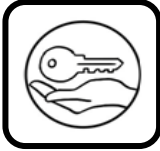
**Directions:** Read the word problem carefully then answer the questions that follow. Write the letter of the correct answer on a separate sheet.

A residential compound has a rectangular water tank which measures 9 meters long, 7 meters wide and 5 meters deep. How much water does it hold when full?

1. What is asked in the problem?
  - A. The amount of water it holds.
  - B. The shape of the tank.
  - C. The volume of the water.
  - D. The volume of the rectangular water tank.



2. What information are given in the problem?
- A. 7m deep and 7m wide                      C. 9 m and 5m  
B. 7 m and 9 m                                  D. 9 m, 7 m, and 5 m
3. Which of the following is the formula used in solving the problem?
- A.  $V = l \times w$                                       C.  $V = l \times w \times h$   
B.  $V = b \times h$                                       D.  $V = \frac{1}{2} \times b \times h$
4. What unit of measure will be used in the problem?
- A.  $\text{cm}^3$                                       B.  $\text{m}^3$                                       C.  $\text{m}^2$                                       D.  $\text{cm}^2$
5. What is the correct answer in the problem?
- A.  $168 \text{ m}^3$                                       B.  $315 \text{ m}^3$                                       C.  $184 \text{ m}^3$                                       D.  $192 \text{ m}^3$



## Answer Key

**What I Know:**

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

**What's In:**

- 1.  $60\text{cm}^3$
- 2.  $336\text{cm}^3$
- 3.  $140\text{m}^3$
- 4.  $54\text{cm}^3$
- 5.  $162\text{m}^3$

**What's New:**

- 1. Cora
- 2. Jewellery box
- 3. Sharing

**What is it:**

Problem A. The volume of jewellery box is  $576\text{ cm}^3$ .  
Problem B. There will be  $864\text{ cm}^3$  remained in Box A.

**What's more:**

Problem A.  $15\,000\text{ cm}^3$   
Problem B. Length = 5  
Problem C.  $3\,360\text{ cm}^3$

**What I Can Do:**

- 1.  $16\text{ m}^3$
- 2.  $108\text{ cm}^3$

**Assessment:**

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

## References:

Alma R. Tubilang, et al., *Mathematics 4 Learners Material*, Pasig City, LEXICON PRESS, INC. 2015, 237-240.

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# 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.”