Republic of the Philippines
Department of Education
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UNIFIED SUPPLEMENTARY LEARNING MATERIALS
(USLeM)

MATHEMATICS 5
Quarter 4 Week 3

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LESSON: Estimate and Use Appropriate Units of Measure for Volume

Expectation:

After going through this module, you are expected to estimate and use appropriate units of measure for volume.

Pretest

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

1. What is the approximate volume of a raindrop?

A. centiliter B. deciliter C. liter D. milliliter

2. Haven wants to find out the capacity of their water jug at home. What appropriate unit of measure does she need to use?

A. centiliter B. deciliter C. liter D. milliliter

3. Which is the appropriate metric unit in measuring the volume of a chalk box?

A. cubic centimeters
B. liters
C. cubic meters
D. milliliters

4. What is the estimated volume of a cube with side of 3.1 cm?

A. 9 cm^3 B. 27 cm^3 C. 30 cm^3 D. 32 cm^3

5. What is the estimated volume of a rectangular prism with the dimensions of 3.25 in by 1.27 in by 5 in?

A. 15 in^3 B. 21 in^3 C. 27 in^3 D. 32 in^3

Looking Back

Directions: Refer to the given figures below and answer the questions that follow.

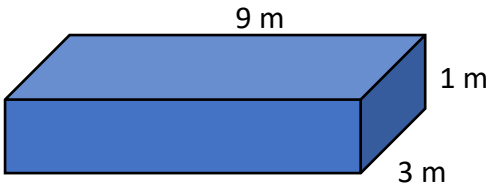


Figure 1

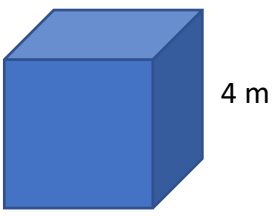


Figure 2

1. Which of the two figures has greater volume? _____

2. What is the volume of Figure 2? _____

3. Calculate the volume of Figure 1. _____

4. If the length of the side of Figure 2 will be doubled, what will be its volume?

5. What is the possible length of the side of Figure 2 so that the two figures will have equal volumes? _____

Brief Introduction

Mar wants to know the appropriate unit of measurement of the volumes of the following objects.

Test tube Alphabet Block

What do you think is the appropriate unit of measure used to describe the volume of the alphabet block and the capacity of a test tube?

Imagine yourself measuring the dimensions of an alphabet block with a ruler. What is the approximate value you could get?

The side of a toy block is usually 3 cm. We know that 1 inch = 2.54 centimeters. So, when these values are converted to inches, it is about 1.18 inch per side.

Can you measure the edge of the alphabet block in feet or meters?

It is not possible to accurately measure the dimensions of the block in feet or meters. Therefore, the appropriate unit of measure to describe the dimensions of an alphabet block is **inches** or **centimeters**.

How about the capacity of a test tube? Can you measure it using liters?

The appropriate unit to measure the capacity of a test tube is **milliliter** due to its size. Test tube is a container for small amount of liquid or chemical solutions. For example the blood of a patient need to be examined, the blood specimen of the patient will be stored in a test tube.

Other Examples:

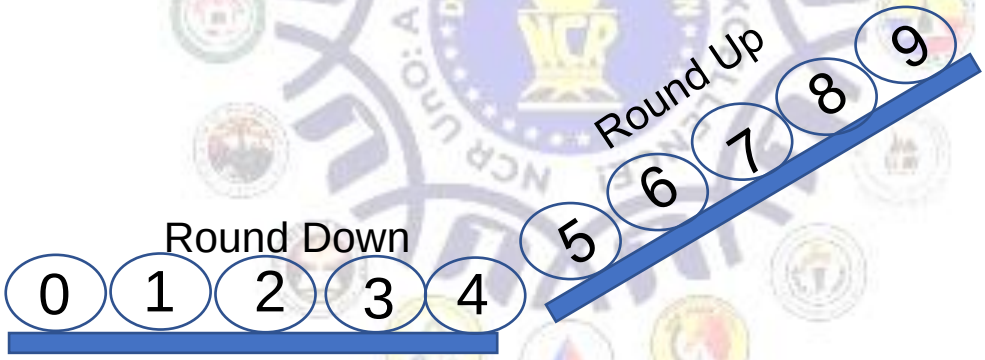
Object	Unit of Measurement
1. pencil case	cubic millimeter or cubic centimeter
2. eraser	cubic millimeter
3. car	cubic meter
4. book	cubic centimeter or cubic inches
5. storage room	cubic feet or cubic meter
6. drum of water	liter or gallon
7. box of milk	milliliter or liter
8. glass of water	milliliter
9. teaspoon of honey bee	milliliter
10. ink of a pen	milliliter

Notice that mm^3, cm^3, m^3, in^3, and ft^3 are usually used for the volumes of solids while milliliter, liter, and gallon are for the volumes of liquids.

One way in estimating the volume of a rectangular prism and cube is by rounding off.

Steps in Rounding a Number

1. To round a number, you must first find the rounding digit or the digit occupying the place value you are rounding to.
2. Look at the digit to the right of the rounding digit.
3. If it is less than 5, then leave the rounding digit unchanged.
4. If it is equal or greater than 5, add one to the rounding digit.



Example:

An aquarium 30.5 cm long, 15.2 cm wide and 20.3 cm high is to be filled with water. Find the estimated the volume of the aquarium.

Based on the given dimensions of the aquarium we can conclude that it is a rectangular prism.

The formula to find the volume of rectangular prism is l x w x h.

Round off the factors to the nearest whole numbers and substitute to the formula. Since 5 is the digit to the right of the rounding digit of 30.5, round up 30 to 31. The digits 2 and 3 in 15.2 and 20.3 are less than 5, round down to 15 and 20, respectively.

31 cm x 15 cm x 20 cm = **9 300 cm^3**

The estimated volume of the aquarium is 9 300 cm^3.

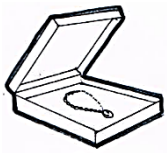
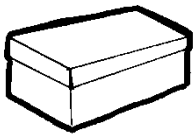
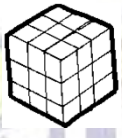
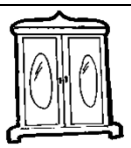
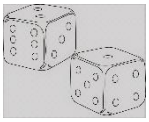
Activities

Activity 1:

Directions: Identify the appropriate units of measurement in finding the volumes of the following objects. Color the box accordingly.

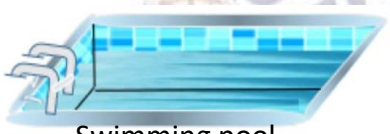
BLUE – milliliter RED- liter

YELLOW- cubic centimeter ORANGE- cubic meter

Jewelry Box 	Pail of Water 	Medicine syrup 	Shoe Box 
Perfume 	Rubik's cube 	Kettle 	Wardrobe cabinet 
Family- sized Soda 	Tears 	Balikbayan box 	Die or dice 

Activity 2:

Directions: Choose the appropriate units of measurement for the following examples. Encircle the letter of your answer.

1. 

Swimming pool

A. 3 liters
B. 3 kiloliters
C. 3 milliliters
D. 3 centiliters

3. 

A. 3 332 cubic feet
B. 3 332 cubic inches
C. 3 332 cubic meters
D. 3 332 cubic kilometers

2. 

A. 1 centiliter
B. 1 liter
C. 10 milliliters
D. 10 kiloliters

4. 

A. 1 centiliter
B. 1 kiloliter
C. 1 liter
D. 1 milliliter

5. 

A. 14 cubic feet
B. 14 cubic inches
C. 14 cubic meters
D. 14 cubic kilometers

Activity 3:

Directions: Estimate the volumes of the following objects. Write your solution on the space provided.

1. A box 3 dm long, 2.5 dm wide and 4.3 dm high.

2. A box whose side is 5.5 inches.

Remember

- In measuring the volume, the unit of measure to be used should match the size of an object.
- The formula in finding the volume of a cube is side x side x side or s^3. To find the volume of a rectangular prism, multiply its length x width x height.
- Steps in Rounding a Number
  1. To round a number, you must first find the rounding digit or the digit occupying the place value you are rounding to.
  2. Look at the digit to the right of the rounding digit.
  3. If it is less than 5, then leave the rounding digit unchanged.
  4. If it is equal or greater than 5, add one to the rounding digit.

Checking Your Understanding

Directions: Using a tape measure or ruler, measure the following objects and record your answer on the space provided. Write your answer to the nearest whole number.

Let's Measure It!!!

1. Shoe box

Length	Width	Height

Volume: _____

2. Cabinet

Length	Width	Height

Volume: _____

3. Die/Dice

Side: _____

Volume: _____

Posttest

Directions: Encircle the letter of the correct answer.

1. What is the approximate volume of a medicine dropper?

A. centiliter B. deciliter C. liter D. milliliter

2. Yumi wants to find out the capacity of a small bottle of alcohol. What appropriate unit of measure she needs to use?

A. centiliter B. deciliter C. liter D. milliliter

3. Which is the appropriate metric unit in measuring the water in a drum?

A. centiliter B. deciliter C. liter D. milliliter

4. Approximately, what is the volume of a box with side length of 10.1 cm?

A. 100 cm^3 B. 1 000 cm^3 C. 1 300 cm^3 D. 1 500 cm^3

5. What is the estimated volume of a chocolate box with the dimensions of 4.2 in by 2.27 in by 1 in?

A. 8 in^3 B. 10 in^3 C. 11 in^3 D. 12 in^3

Answer Key

Pretest

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

Looking backward

1. Figure 2
2. 64 m^3
3. 27 m^3
4. 512 m^3
5. 3 m

Activity 1

Y	R	B	Y
B	Y	R	O
R	B	O	Y

Activity 2

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

Activity 3

1. 36 dm^3
2. 216 in^3

Check your Understanding

ANSWERS MAY VARY

Posttest

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

References:

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Appropriate tools for metric Measurement (April 12, 2017). Retrieved from https://www.ck12.org/book/ck-12-middle-school-math-concepts-grade-7/section/2.20