

Wednesday, September 13, 2018

Your Learning Goal:

After students learn how to read a graduated cylinder, they will use the instrument to correctly measure and mix colored water in the "Rainbow Lab".

Table of Contents: Volume of Regular Objects* – 5R

Catalyst: (5L)

When is a time you had to measure the volume of an object? How did you do it?



Homework:

Word Wall

Agenda:

1. Catalyst
2. Notes: Volume
3. Volume Practice

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<u>Date</u>	<u>Assignment</u>	<u>Pg #</u>
8/24/18	Marshmallow Challenge *	1R & L
8/30/18	Observation vs. Inference *	2R & L
9/4/18	Rules of the Ruler *	3R & L
9/11/18	Mass Mania *	4R & L
9/13/18	Volume of Regular Objects *	5R & L

9/13/18

Catalyst:

When is a time you had to measure the volume of an object? How did you do it?

5L

9/13/18

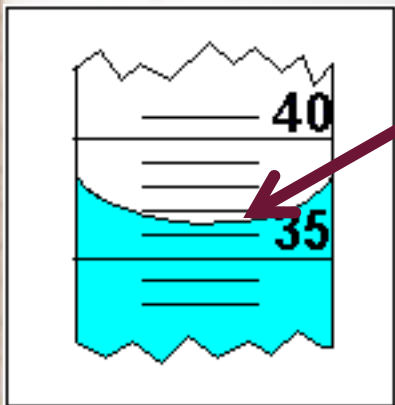
Volume of Regular Objects

5R

Volume of Regular Objects

9/13/18

- A graduated cylinder is used to measure the volume of liquids.
- Metric units for liquid volume are milliliters (mL) or solid volume are Centimeters³ (Cm³).



*Meniscus: the bottom part of the liquid that is curved.

*Rules on how to read volume:

1) Keep the graduated cylinder on a flat surface.

2) Read the bottom of the meniscus at eye level.

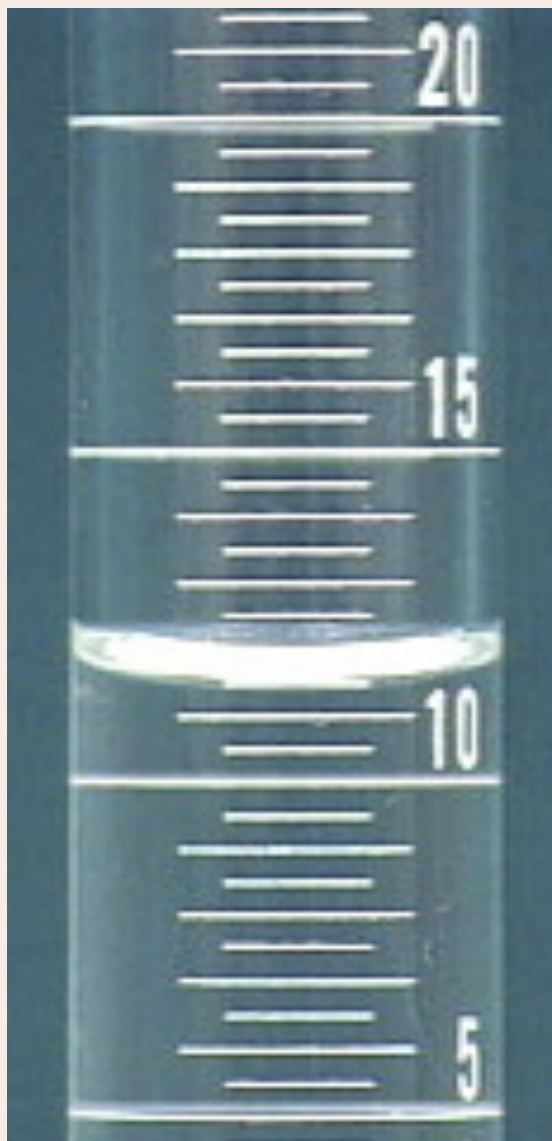
*The formula to calculate a regular shaped solid object is:

$$\text{volume}_{\text{solid}} = \text{length} \times \text{width} \times \text{height}$$

* 1 cm³ = 1 mL
(solid) (liquid)

5R

**Small Graduated
Cylinder (25 mL)**



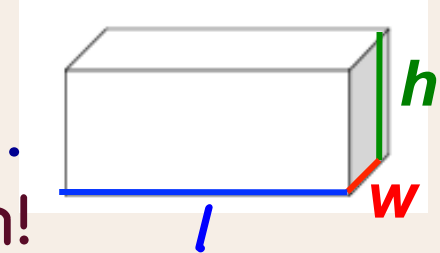
**Large Graduated
Cylinder (50 mL)**



Directions: Parts A-C

Part A: Measuring Volume by Formula

- Use your ruler to measure the table bin.
- Make sure your measurements are in cm!



Part B: Measuring Volume by Graduated Cylinder

- Read the directions carefully.
- Make sure you write down your prediction before you start.
- $$\text{Average} = \frac{(\# \text{ of drops to } 8 \text{ mL}) + (\# \text{ of drops to } 9 \text{ mL}) + (\# \text{ of drops to } 10 \text{ mL})}{3}$$

Part C: Exploring Volume

- Use Parts A and B to explain what volume means.
- If you get stuck, use your notes on **5R!**

Directions: Part D

Part D: The Color Challenge

*It is very important you **wash out** your pipette and graduated cylinders or you will **contaminate** your colors!*

READ DIRECTIONS ALOUD AS A TEAM and FOLLOW THEM EXACTLY

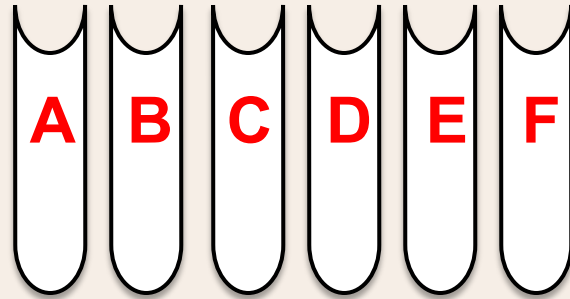


Directions: Part D

- Read the directions carefully.
- Remember, if you mess up, you cannot start over! Once the colors are mixed, they will stay mixed.
- **CLEAN** the graduated cylinder after you use it!
- When you are done mixing all the colors together, **record** the **colors** in your chart.
- Then, measure the amount of liquid in each test tube by pouring it into a **CLEAN** graduated cylinder.
- **Record** the **volume** in your chart.

LEAF

1. *Draw, label, and color* each test tube.



2. *Respond* to the prompt

LEAF 5L

Lead: Where you state the topic of your paragraph.

When measuring volume of a solid and a liquid, _____ is more accurate because...)

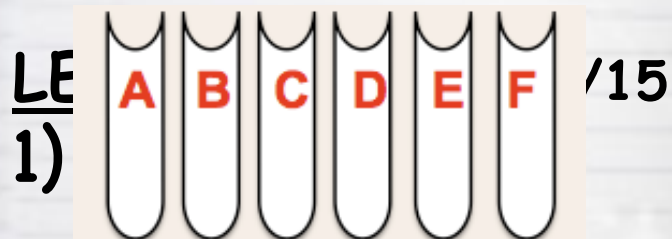
Evidence: Observable and quantifiable data that a writer uses to support a claim. (When measuring liquids, _____ drops and _____ average drops were in one mL. When measuring solids _____ was the volume of our class bin.)

Analysis/Warrant: Certain rules that connect evidence back to claims—how the evidence supports the claim. (What procedures make the calculation volume of these objects different?)

Finisher: Restating your claim in a new way to provide closure for your argument. (How is the calculation of liquid volume and solid volume different, how does it effect accuracy?)

9/6/16

Catalyst:



2) 2. Respond to the prompt

5L

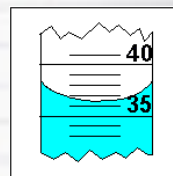
9/6/16

Volume of Regular Objects

* **Volume** is how much space an object takes up.

* A **graduated cylinder** is used to measure the **volume** of liquids. The **units** for the **volume** of liquids are **milliliters (mL)** or **Liters (L)**.

* It is numbered from bottom up.



* **Meniscus**: the bottom part of the liquid that is curved.

* Rules on how to read volume:

- 1) Keep the **graduated cylinder** on a flat surface.
- 2) Read the **meniscus** at eye level.
- 3) Read the bottom of the **meniscus**.

* The **formula** to calculate a regular shaped object is:

$$\text{volume}_{\text{solid}} = \text{length} \times \text{width} \times \text{height}$$

$$* 1 \text{ cm}^3 = 1 \text{ mL}$$

(solid) (liquid)

5R